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GEOPHYSICAL RESEARCH PAPERS

No. 59

PROJECT PRAIRIE GRASS, A FIELD PROGRAM IN DIFFUSION

VOLUME I

EDITED BY
MORTON L. BARAD

JULY 1958

GEOPHYSICS RESEARCH DIRECTORATE
AIR FORCE CAMBRIDGE RESEARCH CENTER
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE
BEDFORD, MASSACHUSETTS

AFCRC-TR-58-235(I) July 1959

ERRATA

The following entries were omitted from TABLE 3.1, Surface Weather Observations, p. 19, of VOLUME I, Geophysical Research Papers No. 59, "Project Prairie Grass, A Field Program in Diffusion," dated July 1958:

Gas Release No.	Time (CST)	Ceiling	Visibility (miles)	Temp. (°F)	Wind Direction	Dev Point (°F)	Wet Bulb (°F)	Relative Humidity (%)	Total Sky Cover
66	2115	UNL	15	69	S	47	57	45	0
67	0035	UNL	15	69	S	-	-	-	0
68	0235	UNL	15	70	S	-	-	-	0

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No. 59

PROJECT PRAIRIE GRASS, A FIELD PROGRAM IN DIFFUSION

Volume I

Edited by
MORTON L. BARAD

July 1958

Project 7657

Atmospheric Analysis Laboratory
GEOPHYSICS RESEARCH DIRECTORATE
AIR FORCE CAMBRIDGE RESEARCH CENTER
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE
Bedford, Mass.

PREFACE

During the Summer of 1956, sixty scientists, technicians, and test support personnel participated in an experimental program in micrometeorology. This program, nicknamed Project Prairie Grass, was conducted in north-central Nebraska near the town of O'Neill. Four universities and two government agencies participated in the field program, which was conceived and directed by personnel of the Atmospheric Analysis Laboratory of the Geophysics Research Directorate, Air Force Cambridge Research Center. The participants represented Massachusetts Institute of Technology, Texas A&M Research Foundation, University of Washington, University of Wisconsin, Air Weather Service, and units of the Air Force Cambridge Research Center.

The primary objective in Project Prairie Grass was to determine the rate of diffusion of a tracer gas as a function of meteorological conditions. The purposes of this paper are (1) to describe the equipment and procedures used in dispensing and sampling of the gas, analysing gas samples, measuring meteorological parameters, and reducing and processing data; and (2) to present tabulations of the data collected. It is not the intention here to present analyses of the data, evaluate existing diffusion models, or develop new models. Such analyses have been initiated by the research teams that participated in Project Prairie Grass and by other research groups under contract with the Geophysics Research Directorate. It is expected that their findings will be published in professional journals and in contract reports. It is hoped that other scientists, using the material contained in this report, will also undertake studies of the diffusion problem.

This report is being presented in three volumes to facilitate reading of text and use of data. Volume I contains an introductory

chapter which provides a background of the field program. Chapter 2 contains a description, by Texas A&M personnel, of the field site at O'Neill. The surface weather observations made by the Texas A&M group are presented in Chapter 3. Chapter 4 contains the surface synoptic charts prepared by GRD personnel. A description of the diffusion technique as well as tabulations of the diffusion data are presented in Chapter 5 by MIT personnel. Chapter 6 includes a description of the instrumentation used by MIT to measure wind speed and direction parameters, as well as tabulations of the wind data.

Volume II opens in Chapter 7 with a description of the instrumentation used by the Texas A&M group to determine mean profiles of air temperature, soil temperature, and wind speed as well as other terms necessary in calculating the heat budget at the air-earth interface. Chapter 8 includes the profile data collected during the test periods as well as during other periods during the summer. In Chapter 9, Texas A&M scientists describe a method of computing heat budget terms and present a tabulation of such terms for the test periods. Another technique for determining the heat budget terms was employed by a University of Wisconsin team. Their technique and computed heat budget terms appear in Chapter 10. A technique of determining temperature profiles by optical methods is being developed by research workers at the University of Washington. A description of the optical method technique and the data collected at O'Neill are presented in Chapter 11. The rawinsonde data collected by Air Weather Service personnel and edited by GRD personnel are presented in Chapter 12. This volume concludes with a description by GRD personnel of the instrumentation and techniques used in airplane observations of temperature and humidity; and the data collected during the gas releases are tabulated.

Volume III is not expected to be ready for publication before

the end of 1958. Present plans for this volume call for presenting (1) descriptions of the bi-vane anemometry employed by MIT in the measurement of eddy components for determining turbulence spectra and scales of turbulence; descriptions of the procedures employed by Iowa State College in reducing bi-vane data, and by GRD in computing spectra and scales of turbulence; and (2) descriptions of the sonic anemometry employed by the University of Wisconsin in determining turbulence spectra. The spectra and scale data will also be presented in Volume III.

The people who participated in Project Prairie Grass are to be congratulated for the diligence and efficiency they exhibited during the planning for and the performance of the field experiments and during the preparation of this report. They are to be commended for a spirit of cooperation, so necessary in making the program a successful one. A list of the participants follows:

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Our thanks go to the residents of O'Neill, Nebraska for their valuable assistance in the solution of a variety of problems which arose in the course of the field program.

Morton L. Barad
Geophysics Research Directorate

ABSTRACT

Project Prairie Grass was a field program designed to provide experimental data on the diffusion of a tracer gas over a range of 800 meters. In each of 70 experiments the gas was released continuously for 10 minutes at a source located near ground level. The gas releases were made over a flat prairie in Nebraska under a variety of meteorological conditions during July and August of 1956.

This paper includes a brief history of the project and detailed descriptions of the tracer technique and the meteorological equipment used in the field program. Tabulations of the diffusion data and the meteorological data collected during the gas releases are also presented. In addition, this paper contains data on the heat budget at the air-earth interface during other selected periods during the Summer of 1956.

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PROJECT PRAIRIE GRASS, A FIELD PROGRAM IN DIFFUSION

CHAPTER 1
INTRODUCTION

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Project Prairie Grass is the name given to a field program conducted near O'Neill, Nebraska during the Summer of 1956. The main objective in this program was to learn how the diffusion of a tracer gas emitted continuously at a point source near ground level varies with meteorological conditions. This report contains descriptions of the techniques and procedures employed in the program and summaries of the data collected. The purpose in this introductory chapter is to present an account of the historical background of Project Prairie Grass in order that the reader may understand why the research was undertaken and why certain techniques were employed in the field program.

There is little doubt that advances made in diffusion theory and experimentation directly aid in solving a number of practical problems in the atmospheric boundary layer. In the field of air pollution abatement, for example, advances made in diffusion research lead to more intelligent choices of plant location, design of plant buildings and stacks, periods of stack emission, etc. In the field of crop spraying, as another example, progress made through diffusion studies leads to better selection of spray altitudes, spray periods, etc.

There are, however, a number of other boundary layer problems which can also be brought nearer to solution by the insight gained through diffusion research. To solve such problems as the forecasting

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of fog, frost, or low-level wind shear, for example, an increased understanding of the basic mixing processes at work in the lower atmosphere is necessary. In attempts to understand these processes, investigators have studied the diurnal and height variations of turbulent fluxes of momentum, heat, and water vapor. Although these fluxes can be measured at a number of points in space, research workers generally find it difficult to interpret such measurements. Though one may have some success in describing the region through which the property is transported, he is usually at a loss to quantitatively define the source of the property. However, if a distinctive tracer is introduced into the atmosphere at a source which can be precisely defined as to location and strength and if concentrations of this tracer are measured downwind from this source, a means is provided of gaining greater insight into the basic mixing mechanism present in the atmosphere. It is not surprising then that micrometeorologists and hydrodynamicists interested in turbulence phenomena should apply general hypotheses to the development of diffusion theory and should seek to employ data from diffusion experiments to test their diffusion hypotheses. Diffusion theory and experimentation, then, provide more than solutions to specific air pollution problems; they provide a means of improving our understanding of turbulence phenomena.

In this analysis of the situation, the chain of activity goes from general turbulence hypotheses to a specific diffusion hypothesis to experimental verification. A study of the literature reveals that much work has been done, particularly in the past 25 years, in the development of general turbulence and diffusion hypotheses. However, very little has been done in the collection of accurate diffusion data with which to test the diffusion hypotheses.

In January of 1953, a number of university and government scientists engaged in micrometeorological research assembled in Boston to participate in the planning of the Great Plains Turbulence Field Program, a program held later that year near O'Neill, Nebraska.[1]

Although the participants at this planning session were prepared to make a variety of meteorological measurements, no one was prepared to make quantitative measurements of diffusion. It seemed that none of the participants had both a satisfactory tracer technique and the equipment necessary to collect tracer samples in a dense network of stations.

At this point the Geophysics Research Directorate decided to support the development of a tracer technique which would be suitable for studying diffusion rates over a range of about 1 km when the tracer was emitted continuously at a fixed point near ground level. Actually, the development of two tracer techniques was supported. The first involved the use of tritiated ethane, a radioactive tracer.[2] Because of the relatively high costs in manpower and material which would have been imposed if this technique had been used, it was shelved in favor of the second technique, developed by MIT at its Round Hill Field Station.* This technique called for the use of sulfur dioxide as the tracer.

It will be noted that the tracer technique was developed for continuous emission. Historically, theoretical work usually starts with diffusion from an instantaneous point source, with the growth of a small puff of smoke, for example, and then proceeds by integration to other sources such as the continuous source, line sources, etc. Yet, historically, most of the experimental work has begun with the continuous point source. There appear to be at least three reasons for preferring the continuous source over the instantaneous one. First, the engineering of the continuous source with reproducible characteristics, experiment after experiment, is generally simpler. Second, the statistical interpretation of the concentration measurements at downwind stations is simpler, particularly where time-mean concentrations are found, as they were in Project Prairie Grass. Third, the determination of what constitutes pertinent meteorological data and the provision of such data

*See Chapter 5 for a description of the technique developed by MIT.

are generally simpler. For these reasons, principally, a continuous source was chosen for Project Prairie Grass.

In the diffusion experiments an emission time of 10 minutes was chosen. This time was a compromise, arrived at after considering such factors as the cost of tracer gas, practical rates of emission, distance between the samplers closest to the source and the most distant ones, and desirability of having fairly stable time-mean diffusion patterns in the area downwind from the source.

In experiments of this sort, it is desirable that the cost of tracer material be low and that the tracer can be emitted at a fairly constant rate. It is desirable that tracer losses on ground, vegetation, and other surfaces in the area sampled be negligibly low. It is desirable that the sampling rate for each sampler be constant throughout an experiment and that this rate be uniform from sampler to sampler. If the measurements are to be used to evaluate existing hypotheses or to construct new models, it is important that there be an adequately dense network of samplers. Therefore, if hundreds of samplers are to be exposed at one time and if spares are to be available, the samplers must be relatively inexpensive. It is necessary that the analysis of samples be accurate, cover a wide range of concentrations, and be accomplished in relatively short time. It is believed that the diffusion technique developed by MIT meets these requirements very well.

By the Spring of 1955, a decision was made to shift the experimental program from the Round Hill Field Station of MIT to a site which would permit the collection of sulfur dioxide samples over greater downwind distances and over more uniform terrain and vegetation. A section of land near O'Neill, Nebraska was chosen as the site of the field program.*

*The land leased was Section 14, Township 29 North, Range 11 West, Holt County, Nebraska.

The square mile chosen had the following characteristics:

1. It was a fairly flat area, as Figure 1.1 indicates. The contour lines shown in Figure 1.1 are for 1-foot intervals. The gas source was located at the center of five concentric semicircles having radii of 50, 100, 200, 400, and 800 meters. North of the E-W line passing through the source, the topography is very flat, being within $\pm$ 3 feet of the mean elevation in that part of the section. The topography rises gently to the southwest with an average grade of about 10 feet per half-mile, and to the southeast with an average grade of about 20 feet per half-mile.

2. Logistical and technical considerations had led to the decision to sample the gas on semicircular arcs rather than on full circular arcs. In a study of the wind climatology of the O'Neill area, it was found that wind directions between 120° and 240° occur more than 50 percent of the time in July and August. On this basis, primarily, the sampling grid was laid out as shown in Figure 1.1.

3. The vegetative cover was fairly uniform as to grass type. The "hayfield" was mowed prior to the experiments, and since there was little precipitation during the months of July and August, the grass height was fairly uniform during the program.

4. The site was relatively free of obstructions to air flow. Most of the equipment used in dispensing the gas was placed in a dugout 50 m upwind of the actual source. A laboratory building and three Jamesway huts were erected over 300 m east-southeast of the source. With the exception of cup anemometers and wind vanes mounted on wooden posts near the source and 450 m north of the source, the meteorological equipment, trailers, and Jamesway huts were all located on the observation line, downwind of the 800 m sampling arc.

5. The nearest farmhouse was over 1300 m northwest of the source. As a result, there were no complaints from nonparticipants about the gas which, on a few occasions, was pungent on the observation line, about 900 m from the source.

6. Stable a-c power was brought to various points in the field. The overhead power line starting at Opportunity Road is shown in Figure 1.1.

The O'Neill area had other advantages: friendly and cooperative townspeople, an airport, and adequate housing.

In diffusion experiments of the type conducted at O'Neill, it is

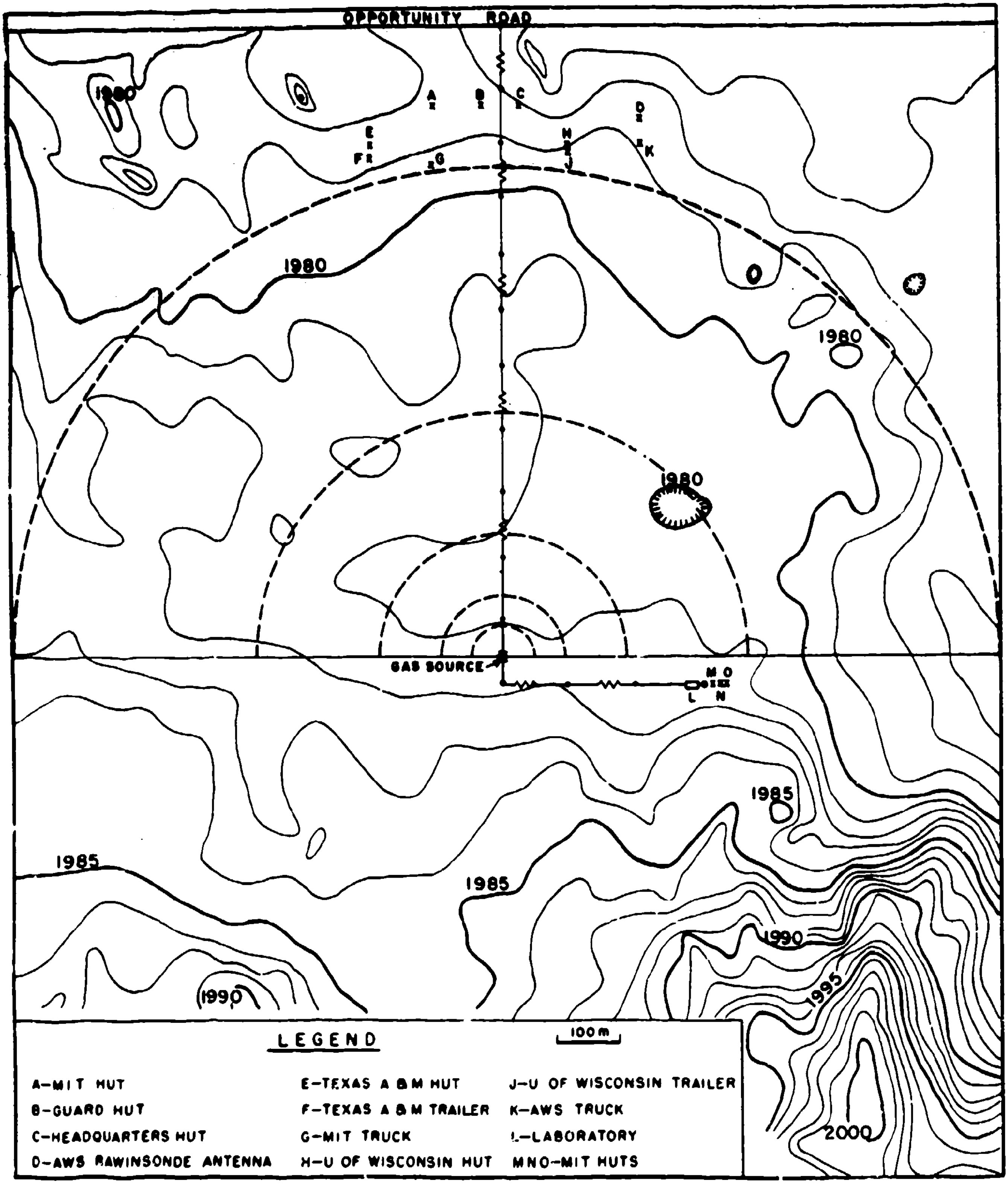

Figure 1.1 Topography of field site and layout of equipment

considered essential that a number of meteorological measurements be made to characterize the experiments and to provide measurements of parameters required for evaluating diffusion models calling for the use of these parameters. Thus, in the Prairie Grass experiments, many of the measurements were suggested by existing diffusion hypotheses. For example, the Sutton hypothesis calls for determining wind profile and gustiness parameters. The Calder-Deacon hypotheses suggest the determination of wind profile parameters and, in implying that the Richardson Number or stability ratio is useful, suggest the measurement of temperature profile. The works of Inoue and Ogura suggest the determination of turbulence spectra and scales of turbulence. Other meteorological measurements were made because there was some evidence that they might be called for in new diffusion models or in the forecasting of diffusion patterns from limited meteorological data.

For the meteorological measurements to be useful, past history in experimental micrometeorology has shown that they must be representative and very accurate. It was the overall impression of the biased participating scientists, as well as those who visited the field program, that the meteorological measurements which accompanied the diffusion experiments were of very high caliber.

REFERENCES

1. Lettau, H. H. and Davidson, B., "Exploring the Atmosphere's First Mile," Pergamon Press Inc., N. Y. (1957)

2. "Development of a Tracer Technique," Final Report, Contract No. AF19(604)-1045, Tracerlab, Inc. (1955)

CHAPTER 2
A DESCRIPTION OF THE FIELD SITE IN PROJECT PRAIRIE GRASS

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The observation site was an extensive, virtually level field previously used to pasture cattle. The field was uncultivated and covered with native prairie grasses. Prior to the first observation period, the grass was mowed and little growth occurred thereafter due to arid climatic conditions.

2.1 Location

The experimental site was located about five miles northeast of the center of O'Neill, Nebraska. Geographical coordinates are Latitude, 42° 29.6' North; Longitude, 98° 34.3' West; altitude at gas source, 1980 feet above mean sea level.

2.2 Landscape

The field is part of a nearly-level upland. The land rises moderately to the southeast to a hill about 0.6 miles from the gas source. There is no surface drainage pattern at all. Rain water soaks into the soil immediately, or accumulates in small depressions until it all infiltrates or evaporates. The drainage pattern of Redbird Creek (a tributary of the Niobrara River) has advanced southward to within about a mile of the site. To the west, south, and east, there are not even intermittent streams for several miles.

From the site, then, except for carefully placed project equipment, one has an unobstructed view for miles (Figure 2.1). Since there are no hills or mountains in the distance, there is no distinct horizon. Toward the southeast the hill forms a visibility mask at 1.5 miles. The unobstructed view is felt only when distant thunderstorms, etc., are observed. Otherwise, there is nothing to see in the distance.

*Present affiliation: U. S. Navy Electronics Laboratory

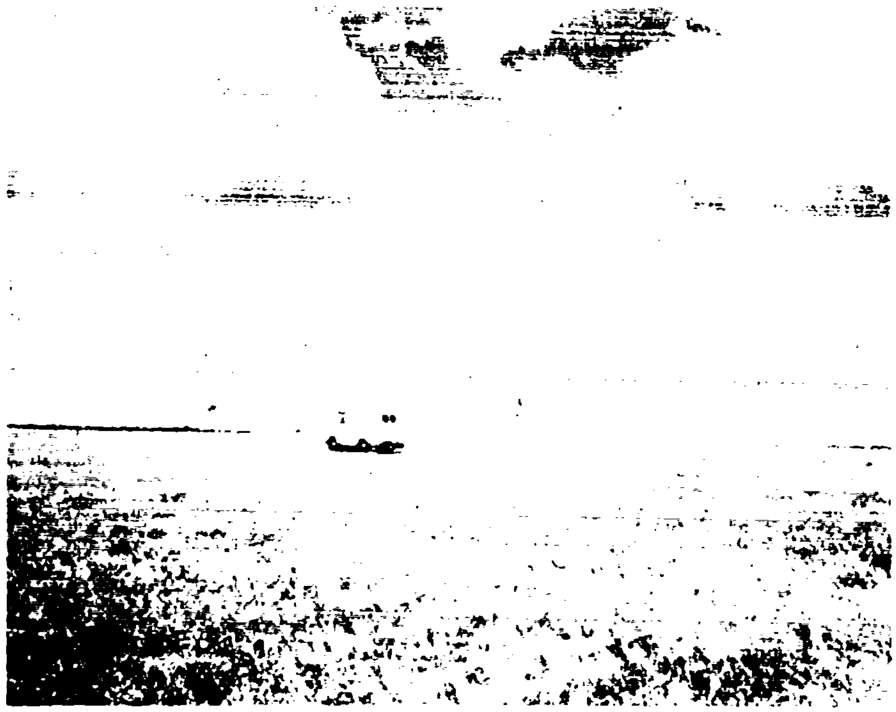

Figure 2.1 View looking southwest from center of observation line at north side of site. Photograph taken in mid-August

Land is laid out in mile-square fields, with a farmstead on many of these "country blocks." There was one farmstead, with its cluster of buildings and trees, about 1300 meters northwest of the gas source.

2.3 Soil

The site was in a hayfield on O'Neill loam, upland phase.[1] This soil has a black, top soil about 25 cm thick. It is loose and friable, and with profuse grass roots forms a tough sod. Organic matter content was determined to be 4 percent. The top soil is underlain by a brown subsoil, about 20 cm thick. Both these layers have good water-holding capacity. From a 45-cm depth to 60 cm, there is a light brown layer of compacted soil. Soil particles are plate-like and horizontal, and this layer is very difficult to cut into from above. However, a small clod of this material may easily be crumbled by lateral compression. Through this compacted layer, few grass roots penetrate.

There are decayed roots, up to 1 cm diameter, of shrubs which once grew here and which did penetrate this layer to the sand below.

Below the compacted layer, from a 60-cm depth to at least a 120-cm depth, the soil is a loose, coarse sand with much gravel. Water held here is only very slowly available to the grass, because few roots penetrate to the sand and water movement upward through the sand and the compacted layer is extremely slow.

Bulk densities of the soil were determined on 10 July, 16 July, 6 August, and 29 August near the Texas A&M instrumentation location. The best values, in grams of dry soil material per cubic centimeter of the natural soil, are given in Table 2.1.

Table 2.1. Values of bulk density

DEPTH (cm)	BULK DENSITY (gm/cm^3)
0 -10	1.05
10-20	1.15
20-30	1.25
30-40	1.34
40-50	1.35
50-60	1.36
60-70	1.41
70-80	1.47
80-90	1.54
90-100	1.60

2.4 Vegetation

The wild hay was cut on 28 June. Through July and August, the field was dominated by the brown stubble 5 to 6 cm high, with some sparse stubble up to 20 cm high. After a rain, the field had a greenish brown appearance for a day or two. This was due to a short, fine, green grass coming up, and to the greening of some species of brownish grass that was still alive. Growth of the vegetation, as a whole, was slight, and the amount of dead and living plants standing up remained fairly constant. In late August, scattered, small, green

shrubs became more conspicuous. These shrubs attained a height of approximately 18 centimeters.

There were a few small prickly pears in the field. There was scarcely any litter of plant material lying loose on top of the soil. Dried and weathered cakes of cow dung were spread about rather evenly, about one per three square meters.

2.5 Albedo

Measurements of albedo on 10-11 July; 24-25-26 July; and 8-9 August show that the albedo is lowest at solar noon, and greater near sunrise and sunset. Average values for those days are given in Table 2.2.

Table 2.2. Values of albedo

TIME (CST)	ALBEDO
0605	0.331
0705 & 1805	.254
0805 & 1705	.212
0905 & 1605	.203
1005 & 1505	.190
1105 & 1405	.187
1205 & 1305	0.184

The albedo varies somewhat with solar angle, cloudiness, moisture on the grass, and changes in the vegetation with time.

2.6 General Weather

Precipitation was measured daily from 29 June through 28 August. Maximum and minimum instrument shelter temperatures were measured from 10 July onward. These data are given in Table 2.3. On most of the days that precipitation occurred, one or more huge thunderstorms were visible from the site. These were accompanied by many cloud-to-ground lightning flashes. No lightning strikes near the site were observed, although electrical interference sometimes halted the use of the thermoelectric temperature measuring system. The only hail storm of the summer, with hailstones about 2 cm in diameter, occurred on 29 June.

Table 2.3. General weather

	Maximum Temperature (°F)	Minimum Temperature (°F)	Precipitation (in.)	Notes
29 June	-	-	0.58	Hail 2 cm in diameter
30	-	-	.00	
1 July	-	-	.23	
2	-	-	.00	
3	-	-	.00	
4	-	-	.21	
5	-	-	.00	
6	-	-	.00	
7	-	-	.00	
8	-	-	.00	
9	-	-	.00	
10	90.0	51.0	.00	Moisture determination
11	96.1	69.2	.00	
12	89.7	60.4	.01	
13	88.0	59.6	.00	
14	98.8	64.9	.08	
15	85.0	64.4	.00	
16	87.1	60.3	.00	Moisture determination
17	90.9	57.2	.00	
18	87.0	60.3	.21	
19	77.7	55.6	.04	
20	81.6	50.9	.00	
21	*	52.0	.00	
22	*	*	.00	
23	92.0	*	.00	
24	89.0	65.0	.00	
25	96.0	55.0	.00	
26	103.9	69.8	.00	
27	88.8	69.6	.00	
28	78.3	60.4	.00	
29	85.8	57.2	.00	
30	95.8	69.0	.03	
31	69.2	64.2	.04	
1 August	81.5	63.9	.32	
2	92.8	67.8	.08	
3	96.8	69.0	.19	
4	90.0	69.2	.11	
5	93.1	58.3	0.00	

*Thermometers were not reset.

Table 2.3. (cont.)

	Maximum Temperature (°F)	Minimum Temperature (°F)	Precipitation (in.)	Notes
6 August	88.2	63.0	0.06	Moisture determination
7	89.8	61.0	.00	
8	89.0	59.4	.04	
9	89.9	58.5	.01	
10	84.9	56.0	.04	
11	84.5	57.7	.00	
12	90.0	63.5	.01	
13	93.0	60.0	.00	
14	96.2	66.0	.00	
15	100.0	54.1	.25	
16	86.9	65.5	.00	
17	83.2	66.0	.00	
18	68.0	56.0	.20	
19	72.0	43.7	.00	
20	73.8	49.7	.00	
21	88.3	46.2	.00	
22	95.9	51.6	.00	
23	90.4	56.3	.00	
24	92.8	48.9	.00	
25	95.5	58.0	.00	
26	99.8	67.0	.00	
27	95.5	58.4	.01	
28	94.1	58.7	0.00	
29	-	50.3	-	Moisture determination

2.7 Soil Moisture

Soil moisture was generally deficient, and no crop of hay was produced after the mowing in late June. Moisture determinations were made on 10 July, 16 July, 6 August, and 29 August along with the bulk density determinations. The values are sufficiently accurate for estimating the heat capacity of the soil. They are not, in themselves, sufficient for specifying availability of soil moisture for evaporation and transpiration. No independent determinations of soil wilting point were made. Due to lateral variability and inadequacy of sampling, these moisture determinations do not permit the computing of changes in soil moisture content for the field.

Values of soil moisture, as percent dry weight, are given in Table 2.4.

Table 2.4. Values of soil moisture as percent dry weight

DEPTH (cm)	10 JULY	16 JULY	6 AUG	29 AUG	AVE OF 4
0-10	7.2	6.8	9.2	6.6	7.5
10-20	7.0	6.3	6.6	6.5	6.6
20-30	3.8	6.3	3.0	6.0	4.8
30-40	4.2	4.9	2.8	4.4	4.1
40-50	5.1	3.9	2.9	5.6	4.4
50-60	3.1	3.7	3.5	6.7	4.2
60-70	1.9	3.4	6.2	3.8	3.8
70-80	1.8	3.2	3.8	2.9	2.9
80-90	2.9	4.8	2.6	2.4	3.2
90-100	5.7	4.8	1.8	2.4	3.7

Most likely all of these values, except those above a 20-cm depth on 6 August, and those of the compacted layer and the sand below, represent the wilting point of the individual samples, or are very slightly higher. These soil samples at the wilting point were dusty and dirty. The loose sand below was cool (about 25°C) and moist to the touch throughout the summer. However, its actual content of water was slight. The high moisture percentages down to 20 cm on 6 August reflect an increase in available moisture from recent rains. The soil in the field, as a whole, appeared to be driest on 29 August although the sample moisture determinations do not bear this out.

Since the soil was near the wilting point all summer, average values of the heat capacity per unit volume are sufficiently accurate for all soil heat computations. These values are given in Table 2.5.

Table 2.5. Values of heat capacity per unit volume

DEPTH (cm)	ρC_p ($cal/cm^3 deg$)
0-10	0.26
10-20	.28
20-30	.28
30-40	.30
40-50	.30
50-60	.30
60-70	.31
70-80	.31
80-90	.33
90-100	0.35

REFERENCES

1. Moran, W. J., et al., "Soil Survey of Holt County, Nebraska," United States Department of Agriculture (1938)

CHAPTER 3

SURFACE WEATHER OBSERVATIONS

W. Covey, M. H. Halstead, S. Hillman,
J. D. Merryman, R. L. Richman, A. H. York

Texas A&M Research Foundation

The surface weather observations at gas release times are given in Table 3.1.

Table 3.1

Time entries on this form are ________th meridian time.

To convert to G.C.T. {add / subtract} ___ hours.

Height of barometer ________ ft (MSL)

STATION: O'Neill, Neb.

MONTH: July DAY ______ YEAR: 1956

LAT. 42° 30' N LONG. 98° 34' W

Gas Release 1	Time (CST) 2	Ceiling (Hundreds of Feet) 3	Sky 4	Visibility (miles) 5	Weather and Obstructions to Vision 6	Sea Level Press. (mbs) 7	Temp. (°F) 8	Dew Pt. (°F) 9	Wind: Direction 10	Wind: Speed (Knots) 11A	Wind: Speed (mph) 11B	Wind: Character & Shifts 12	Altimeter Set (ins) 13	Remarks and Supplemental Coded Data 14	14A	14B	Observer's Initials 15
1	1100	30		13			73	64	S					Ac 50 Sc 30			
2	1505	15		15			75	60	SE					Cu 15			
3	2200	UNL		15			67	63	S								
4	0100	UNL		15			63	62	S								
5	1415	UNL		15			88	61	S								
6	1700	UNL		15			89	62	S								
7	1415	UNL		15			90	55	S					Clear (few)			
8	1700	UNL		15			89	58	S					Clear (few)			
9	1600	UNL		15			83	64	S					As thin			
10	1200	UNL		15			88	66	S					Thin Sc hazy			
11	0800	UNL		12			79	65	S					No haze, band of Sc on E horizon			
12	1000	UNL		12			88	68	S								
13	2000	UNL		15			68	58	S					1. Cu to 40 2 H 50			
14	2200	UNL		15			61	58	S					Clear			
15	0800	UNL		10			72	61	S					H			
16	1000	UNL		10			82	62	S					H			
17	2000	30		15			81	52	S					H Sc 35 ⊕			
18	2200	UNL		15			75	55	S					Sc 30 SW & S			
19	1100	UNL		15			85	56	S					3 Cu 30 ⊕			
20	1400	UNL		15			94	57	S					Scattered thin St			
21	2200	Unknown					84	56	S					Lightning N & NNE distant			
22	0000	Unknown					80	54	S					⊕ Cu lightning north			
23	2100	UNL		15			74	64	SE					Clear			
24	2300	UNL		15			72	65	SE								

Gas Release 16	Time (CST) 17	Dry Bulb (°F) 18	Wet Bulb (°F) 19	Relative Humidity (%) 20	Total Sky Cover 21	Lowest Layer: Amt. 22	Lowest Layer: Type and Dir. 23	Lowest Layer: Height 24	Second Layer: Amt. 25	Second Layer: Type and Dir. 26	Second Layer: Height 27	Summation Total 28	Third Layer: Amt. 29	Third Layer: Type and Dir. 30	Third Layer: Height 31	Summation Total 32	Fourth Layer: Amt. 33	Fourth Layer: Type and Dir. 34	Fourth Layer: Height 35	Pressure Tendency 36	Net 3-Hr. Change 37	38	39	40
1	1100	73	67	73	9	9	Sc	30	6	Sc	50	9												
2	1505	75	67	66	9	9	Cu	15				9												
3	2200	67	64	85	3	3		30																
4	0100	63	62	95	1	1		30																
5	1415	88	71	40	0																			
6	1700	88	71	40	0																			
7	1415	90	68	31	0																			
8	1700	88	68	36	0																			
9	1600	83	70	52	3	3	As	80																
10	1200	88	73	44	3	3	Sc	80																
11	0800	79	70	82	0																			
12	1000	88	74	52	0																			
13	2000	68	62	71	2	1	Cu	40	2	H	50	2												
14	2200	61	58	86	0																			
15	0800	72	65	80	0																			
16	1000	83	70	51	0																			
17	2000	81	64	36	7	7	Sc	30																
18	2200	75	63	51	1	1	Sc	30																
19	1100	85	68	42	3	3	Cu	50																
20	1400	85	70	28	2	2	Cu	50																
21	2200	84	65	36	10	10	St																	
22	0000	80	64	41	6	6	Cu																	
23	2100	75	68	71	0																			
24	2300	72	67	79	0																			

Table 3.1 (Continued)

Time entries on this form are ______th meridian time.

To convert to G.C.T. {add / subtract} ___ hours.

Height of barometer ________ ft (MSL)

STATION O'Neill, Neb.

MONTH August DAY ______ YEAR 1956

LAT 42° 30' N LONG 98° 34' W

Gas Release 1	Time (CST) 2	Ceiling (Hundreds of Feet) 3	Sky 4	Visibility (miles) 5	Weather and Obstructions to Vision 6	Sea Level Press. (mbs) 7	Temp. (°F) 8	Dew Pt. (°F) 9	Wind: Direction 10	Wind: Speed (Knots) 11A	Wind: Speed (mph) 11B	Wind: Character & Shifts 12	Altimeter Set (ins) 13	Remarks and Supplemental Coded Data 14	14A	14B	Observer's Initials 15
25	1300	30		15			77	67	S					Cu overcast 30			
26	1200	35		10			87	70	S					Scu			
27	1400	UNL		15			91	70	S					Cu & Alto Cu			
28	2000	UNL		15			75	68	S					Lightning N			
29	0200	Unknown		15			77	63	S					Few stars			
30	1300	UNL		15			94	64	S SW					Clear (few)			
31	1500	UNL		15			98	63						⊕ 2 Cu 50			
32	2000	UNL		15			72	56	S					St WNW			
33	1300			15			84	62	S								
34	1500	UNL		15			88	67	S					Clear above clouds exp. on line N			
35a	2300	UNL		15			73	64	SE					Lightning NE, SE			
35	2130	UNL		15			68	61	SE					1 Sc ⊕			
36	2330	UNL		15			68	60	S								
37	0300	UNL		15			68	61	S					Cu bank lightning N			
38	0500			15			68	62	S					Lightning NE, E			
39	2235	UNL		8			70	50	SE					Clear few Sc SW			
40	0007	UNL		15			68	53	S/SE					Clear			
41	0305	UNL		15			68	53	S					Clear lightning low on horizon N			
42	0505	UNL		15			73	50	SW					Cu num gig NE (distant) forerunning Cu on E horizon going S; incus due E, building fast			
43	1200	UNL		15			95	53	S/SE					Film Ci - Row of towering Cu to NE running NW to SE			
44	1400	UNL		15			80	52	S/SE					Cu bank to NE			
45	1705			15			80	40	S/SE					Layer of Cu with some vertical development N-NE layer of strata Cu above this			
46	1845			15			81	53	SE					Thunderstorm NW			
47	0800	UNL		15			80	44	S					Bank of St Cu from E thru S to W			

CLOUDS AND OBSCURING PHENOMENA

Gas Release 16	Time (CST) 17	Dry Bulb (°F) 18	Wet Bulb (°F) 19	Relative Humidity (%) 20	Total Sky Cover 21	Lowest Layer: Amt. 22	Lowest Layer: Type and Dir. 23	Lowest Layer: Height 24	Second Layer: Amt. 25	Second Layer: Type and Dir. 26	Second Layer: Height 27	Summation Total 28	Third Layer: Amt. 29	Third Layer: Type and Dir. 30	Third Layer: Height 31	Summation Total 32	Fourth Layer: Amt. 33	Fourth Layer: Type and Dir. 34	Fourth Layer: Height 35	Pressure Tendency 36	Net 3-Hr. Change 37	38	39	40
25	1300	76	70.2	72	10	10	Cu ↗	30																
26	1200	87	75	57	0	0	Sc ↑	35																
27	1400	91	78	50	7	4	Cu ↑	45	3	Ac	100													
28	2000	75	70	78	0																			
29	0200	77	68	63			?																	
30	1300	94	76	38	0	0	Cu ↑	60																
31	1500	98	76	32	2	2	Cu ↑	60																
32	2000	72	62	57	1	1	St																	
33	1300	83	40	8		0	As →																	
34	1500	88	73	50	2	2	Sc																	
35a	2300	72	67	77	2	2																		
35	2130	68	64	76	1	1	Sc ↓																	
36	2330	68	63	78	0	0																		
37	0300	68	64	76	3	3	Cu →																	
38	0500	68	64	79	8	8	Cu →																	
39	2235	70	50	48	0																			
40	0007	68	50	57																				
41	0305	68	60	58																				
42	0505	73	60	44																				
43	1200	95	68	24	10	10	Ci →		6	Ci →														
44	1400	80	60	21	8	1	Cu ←		8	Ci →														
45	1705	80	67	20	8	3	Cu / ↘		6	Sc ↘														
46	1845	81	68	28	8	4	Cu / ↘		5	Sc ↓														
47	0800	80	55	42	3	3	Sc ↘	25																

Table 3.1 (Continued)

Time entries on this form are ______ th meridian time.

To convert to G.C.T. {add / subtract} ___ hours.

Height of barometer ______ ft (MSL)

STATION O'Neill, Neb.

MONTH August DAY ______ YEAR 1956

LAT. 42° 30' N LONG. 98° 34' W

Gas Release 1	Time (CST) 2	Ceiling (Hundreds of Feet) 3	Sky 4	Visibility (miles) 5	Weather and Obstructions to Vision 6	Sea Level Press. (mbs) 7	Temp. (°F) 8	Dew Pt. (°F) 9	Wind: Direction 10	Wind: Speed (Knots) 11A	Wind: Speed (mph) 11B	Wind: Character & Shifts 12	Altimeter Set (ins) 13	Remarks and Supplemental Coded Data 14	14A	14B	Observer's Initials 15
48a	1200	UNL		15			68	44						Puffy Cu			
48	0800	UNL		15			68	55	S					Sc bank N, E, Haze S			
49	1059	UNL		15			76	55	S					Sc bank N, NE, E, Haze S			
50	1406	UNL		15			88	53	S					Wispy Cirrus			
51	1529			15			90	55	W/SW					Wispy Cirrus & Puffy Cu			
52	1112	UNL		15			79	55	ESE					Clear			
53	2000	UNL		15			62	44	SE								
54	2202	UNL		15			66	48	S					Wind Moderate			
55	0058	UNL		15			62	51	SSE					Wind Moderate			
56	0201	UNL		15			60	47	S					St Cu to N & SE Haze to S			
57	1728	UNL		15			86	51	S/SW					Alto Cu moving in from N/NE			
58	1927	UNL		15			79	51	S					Heavy cloud bank W/NW			
59	2226	40		15			75	50	S					Dark heavy clouds to E			
60	0027	300		15			78	47	S					Star & moon partly obscured, can be seen through clouds			
61	1101	UNL		15			84	34	S/SW					Rain NE & SW, St Cu on all horizon, clear over head			
62	1400	180		10			80	53	S					Thunderstorm to NE, rainshowers to W, N, E			
63	2000	UNL		13			74	52	WSW					Bank of Sc N & NW horizon			
64	2210	UNL		15			68	54	SW					Lightning dist. NW & ENE			
65	1915	UNL		15			78	47	S					Sc bank, W, E			

Gas Release 16	Time (CST) 17	Dry Bulb (°F) 18	Wet Bulb (°F) 19	Relative Humidity (%) 20	Total Sky Cover 21	Lowest Layer: Amt. 22	Lowest Layer: Type and Dir. 23	Lowest Layer: Height 24	Second Layer: Amt. 25	Second Layer: Type and Dir. 26	Second Layer: Height 27	Summation Total 28	Third Layer: Amt. 29	Third Layer: Type and Dir. 30	Third Layer: Height 31	Summation Total 32	Fourth Layer: Amt. 33	Fourth Layer: Type and Dir. 34	Fourth Layer: Height 35	Pressure Tendency 36	Net 3-Hr. Change 37	38	39	40
48a	1200	68	55	42	6	6	Cu ↓	50																
48	0800	68	60	62	1	1	Sc ↓																	
49	1059	79			1	1	Sc ↓																	
50	1406	88	67	32	1	1	Ci	230																
51	1529	90	68	31	1	1	Cu ↘	25		Ci	250													
52	1112	79	60	31	0																			
53	2000	62	52	52	0																			
54	2202	66	56	53	0																			
55	0058	62	54	58	0																			
56	0201	60	53	63	0																			
57	1728	86	60	22	0																			
58	1927	79	62	37	3	3	Ac ↘	60																
59	2226	75	61	42	5	5	Cu ↓	40																
60	0027	78	60	33	7	2	Ac	80	5	Cu	300													
61	1101	94	62	12	3	3	Sc ↓	50																
62	1400	88	67	30	8	3	Sc	30	5	Ac	100													
63	2000	75	61	45	1	1	Ci																	
64	2210	68	60	62	0	0																		
65	1915	78	60	33	2	2	Sc ↓																	

CHAPTER 4
SYNOPTIC INFORMATION

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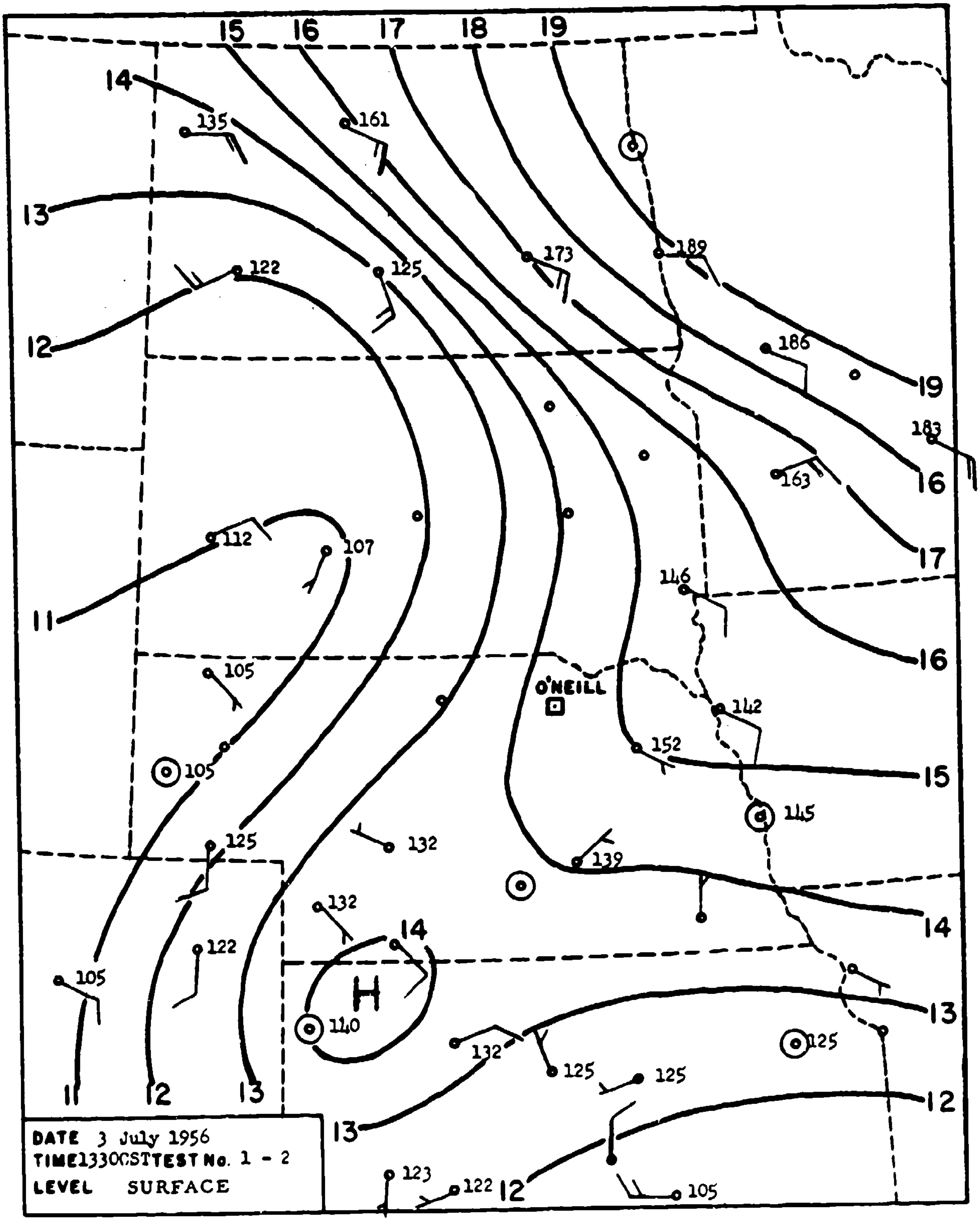
Geophysics Research Directorate
Air Force Cambridge Research Center

At an early stage of the field program, it became very apparent that use of only National Weather Analysis Center facsimile maps and prognoses would not suffice for the purposes of forecasting wind direction for gas releases. Consequently, sectional, sea-level, pressure maps were plotted and analyzed, using hourly airways sequences from the network of stations lying in the area extending from approximately 93°W to 104°W Longitude and from the United States-Canadian border southward to 37°N Latitude. Occasionally, coverage was extended westward as far as approximately 120°W, and southward to about 35°N. Isobars were drawn at 1 mb intervals. These maps revealed many small-scale features of the circulation which seldom appeared on the large-scale facsimile maps, and which often exercised primary control over the airflow at O'Neill. This type of analysis greatly facilitated the wind direction forecasting problem, and enabled more effective scheduling of gas releases.

The accompanying maps were prepared from hourly airways sequences. Times were selected so that, in most cases, the map represents the sea-level pressure pattern existing midway between two gas releases. The only values plotted are the surface wind speed and direction and the sea-level pressure report from the station. Temperatures were used in some of the analyses, but omitted from the figures in the interest of clarity of reproduction. Standard analysis procedure was used, except that the isobar interval is 1 millibar. All analyses were checked for consistency with the U. S. Weather Bureau analyses for the same period. The isobar labels are the last two digits of the sea-level pressure: 13 = 1013 millibars.



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O'NEILL
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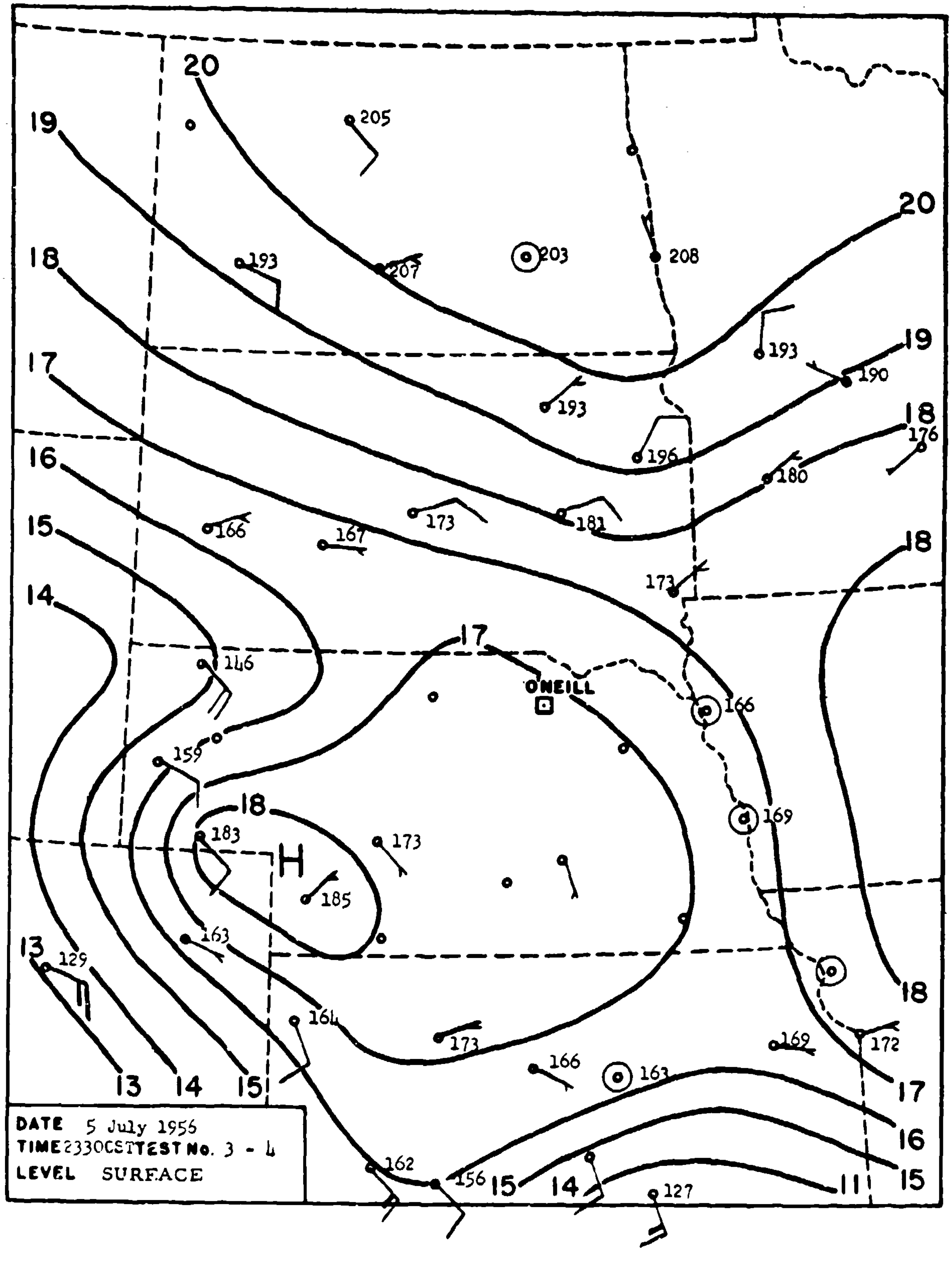
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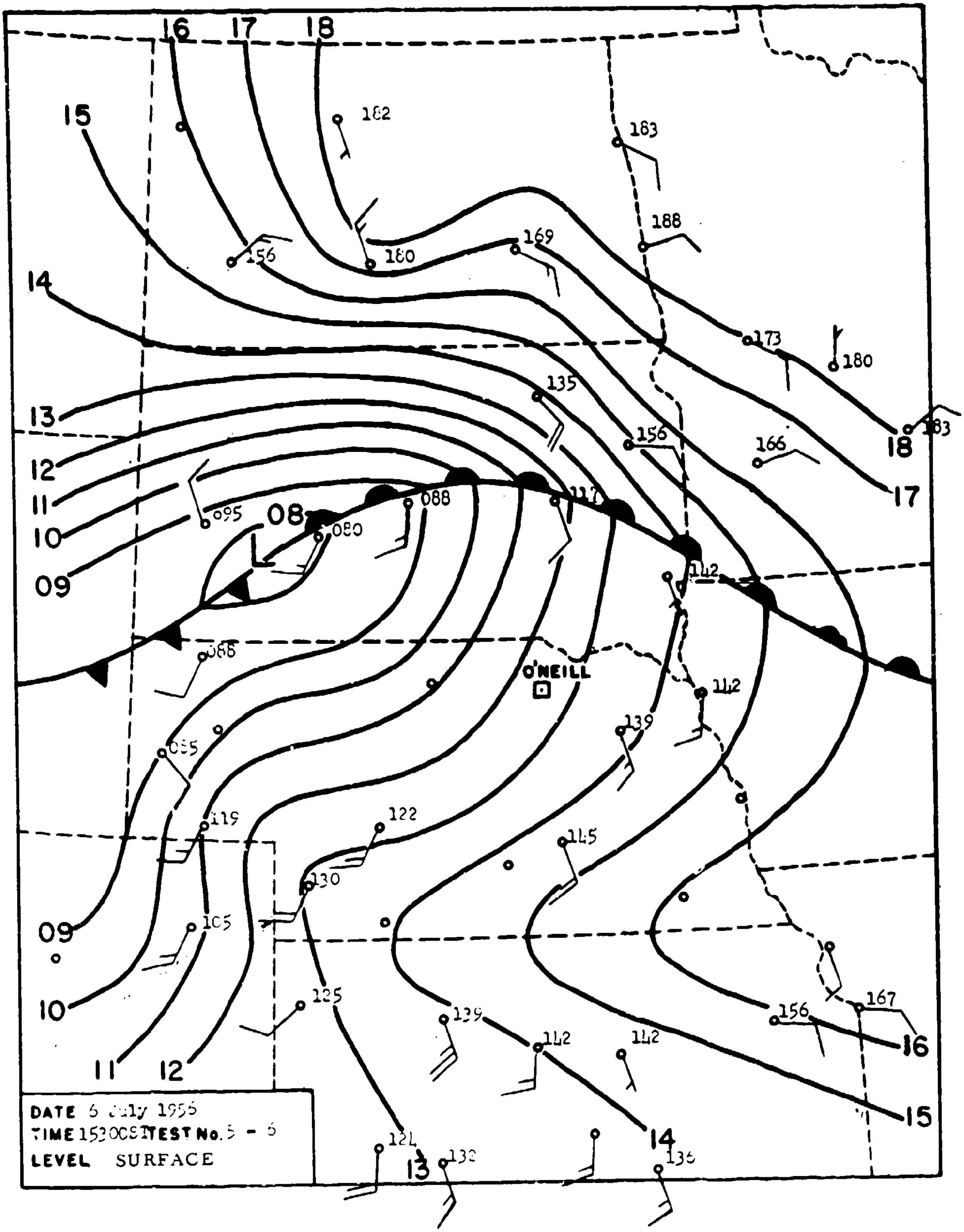
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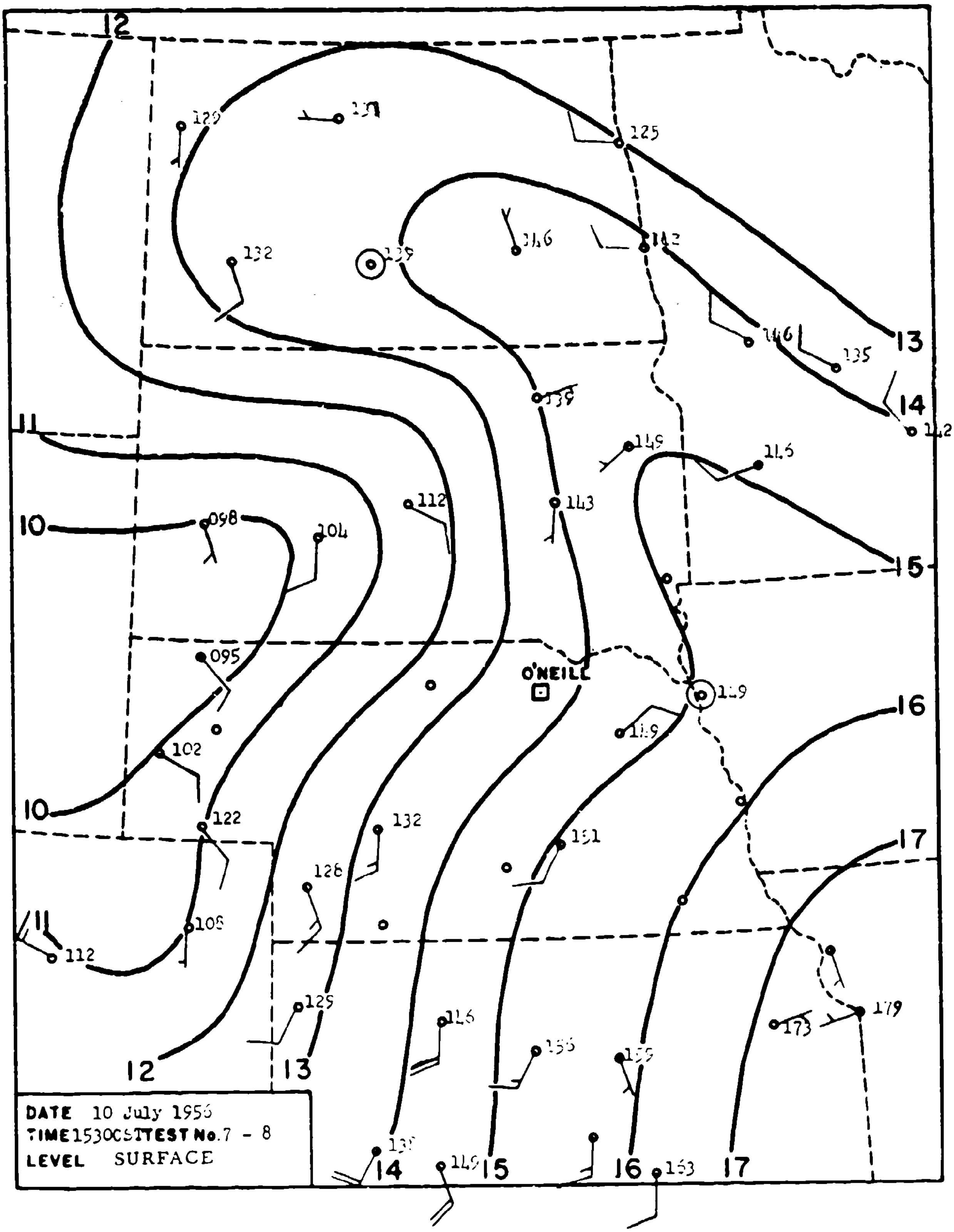
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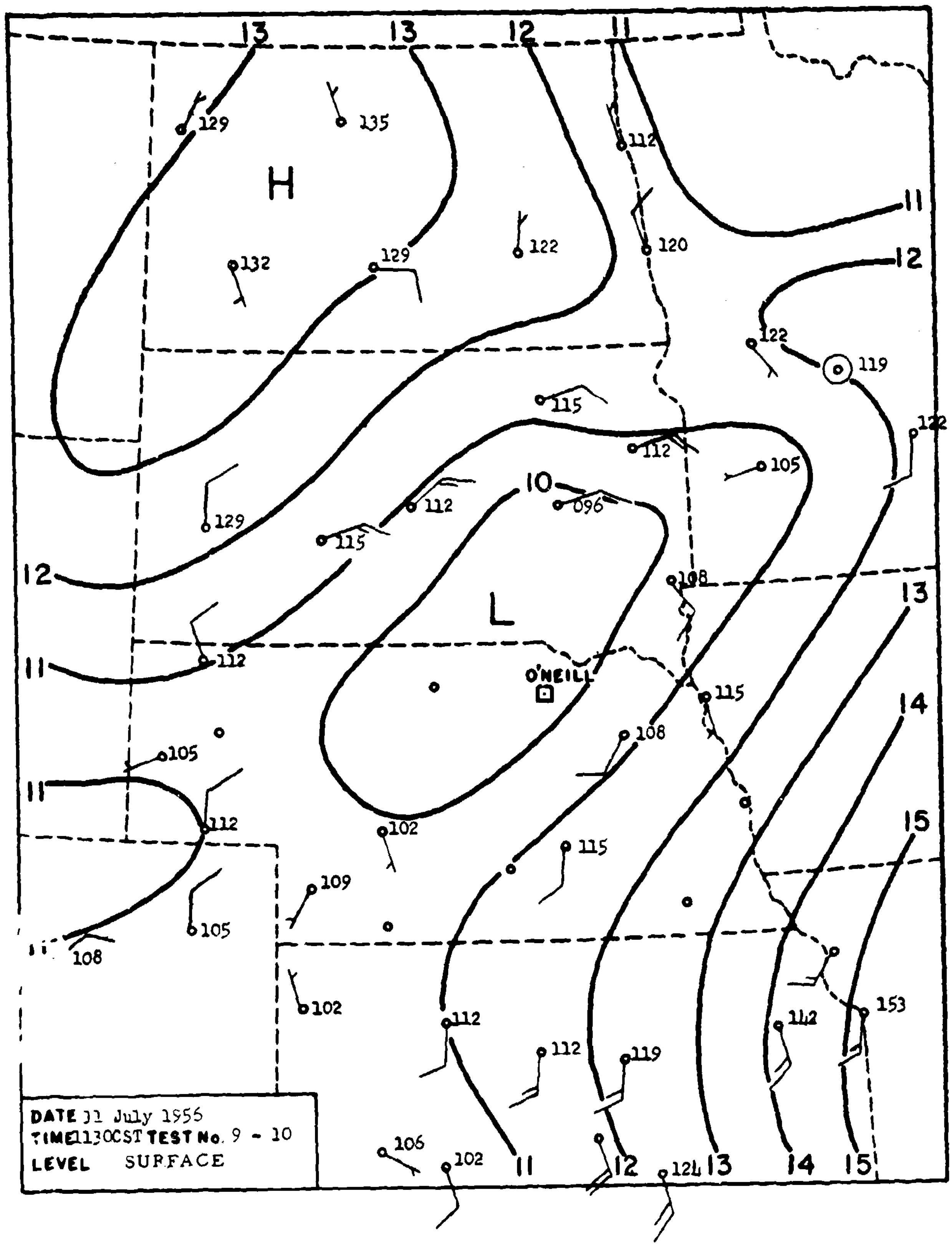

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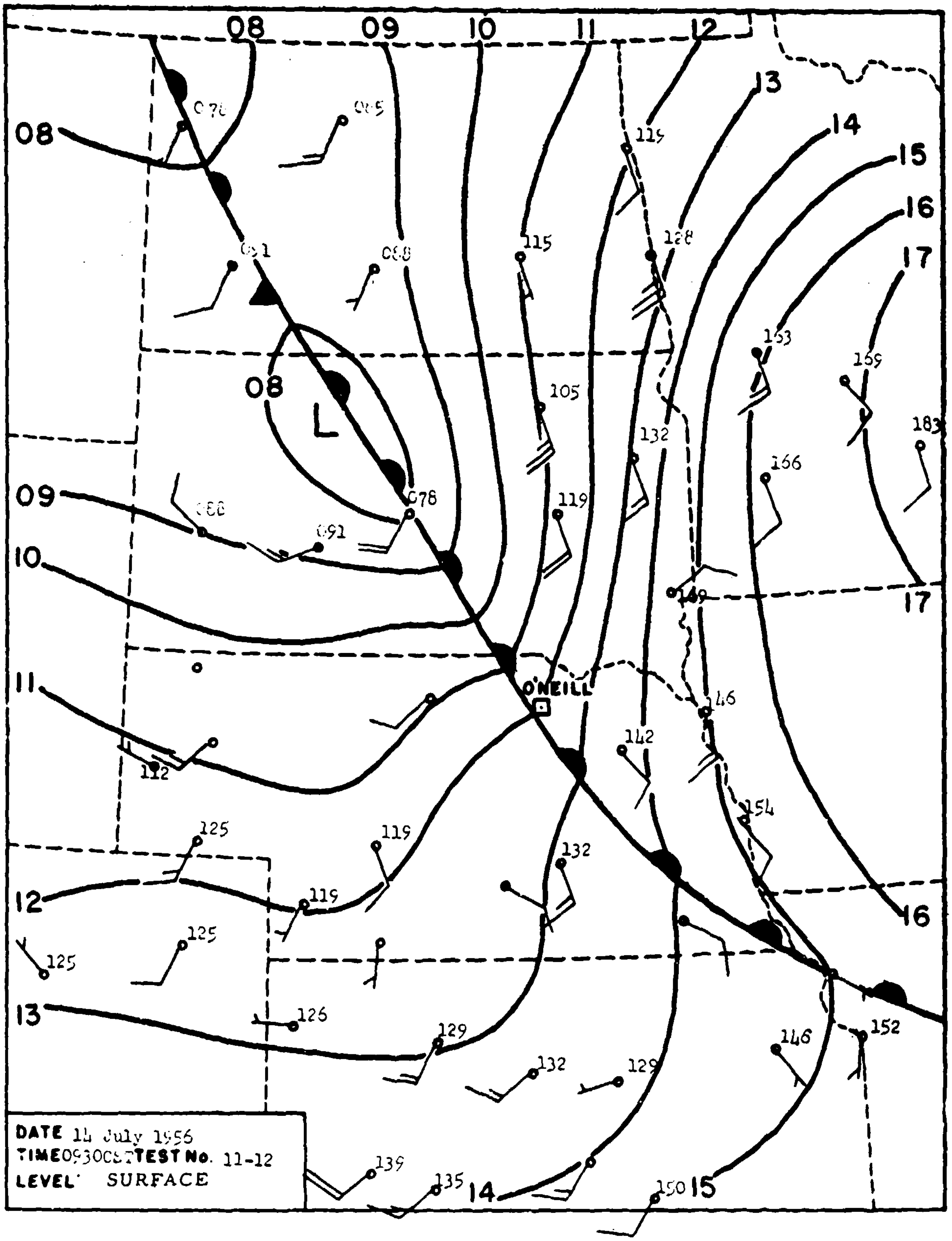
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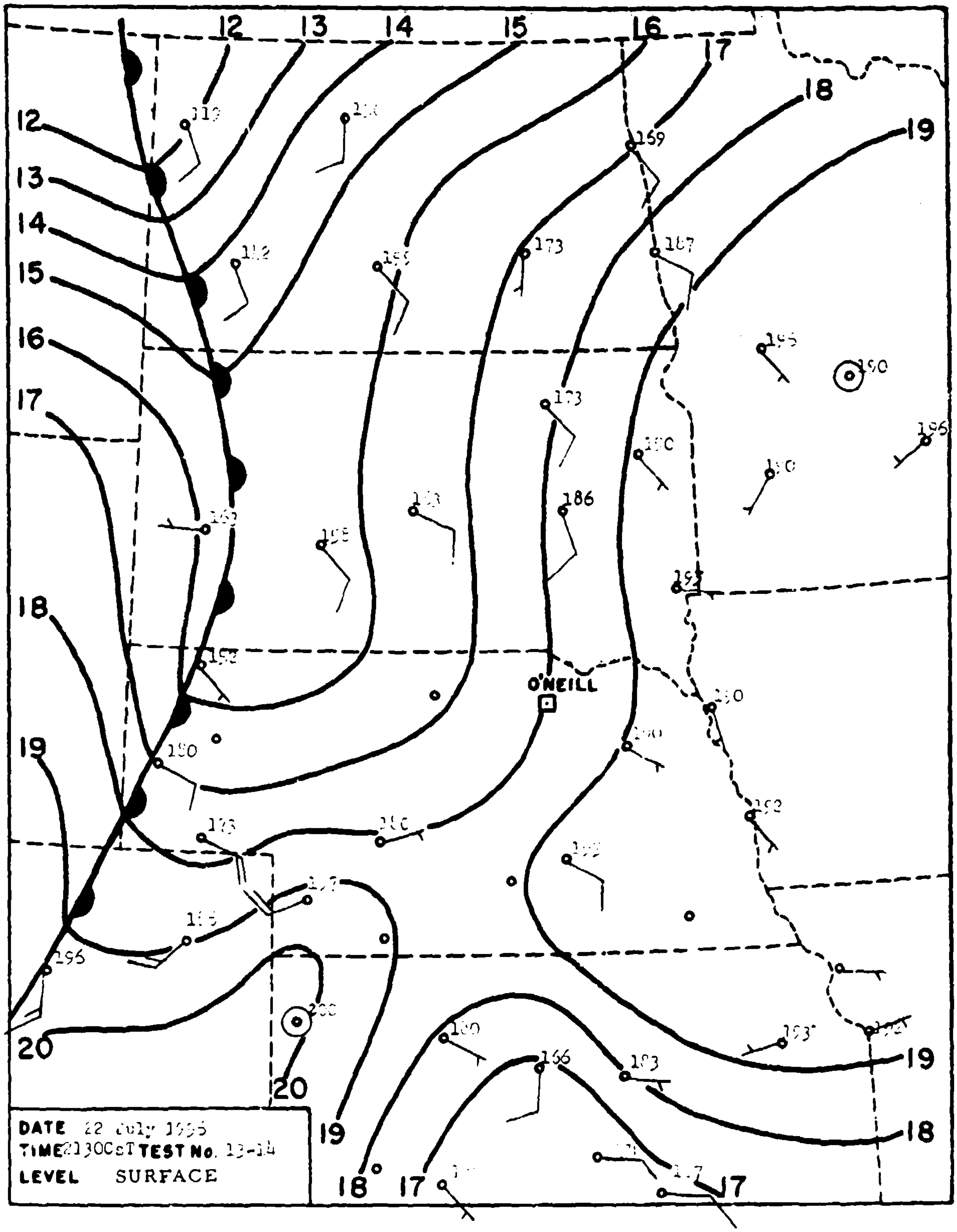
LEVEL SURFACE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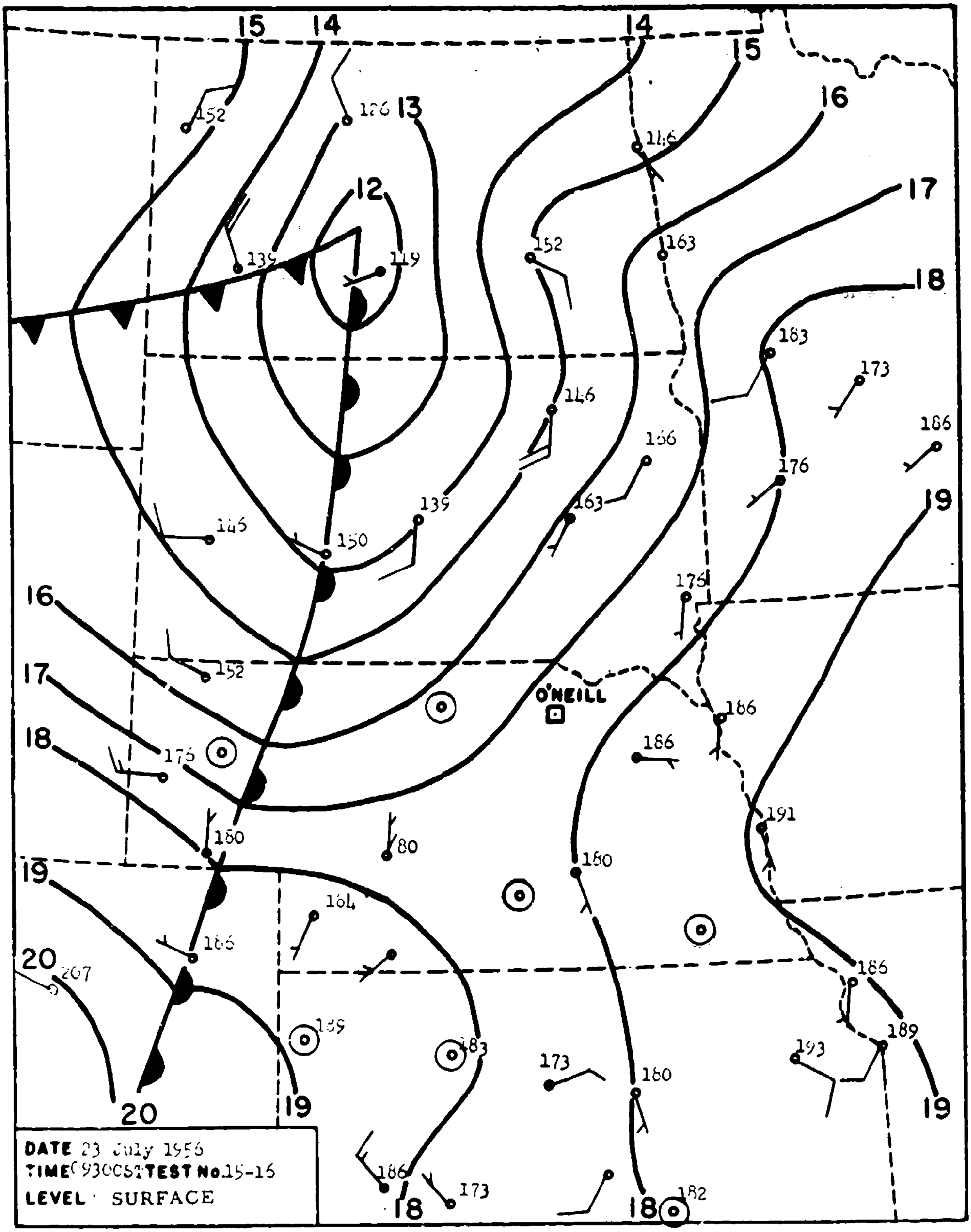
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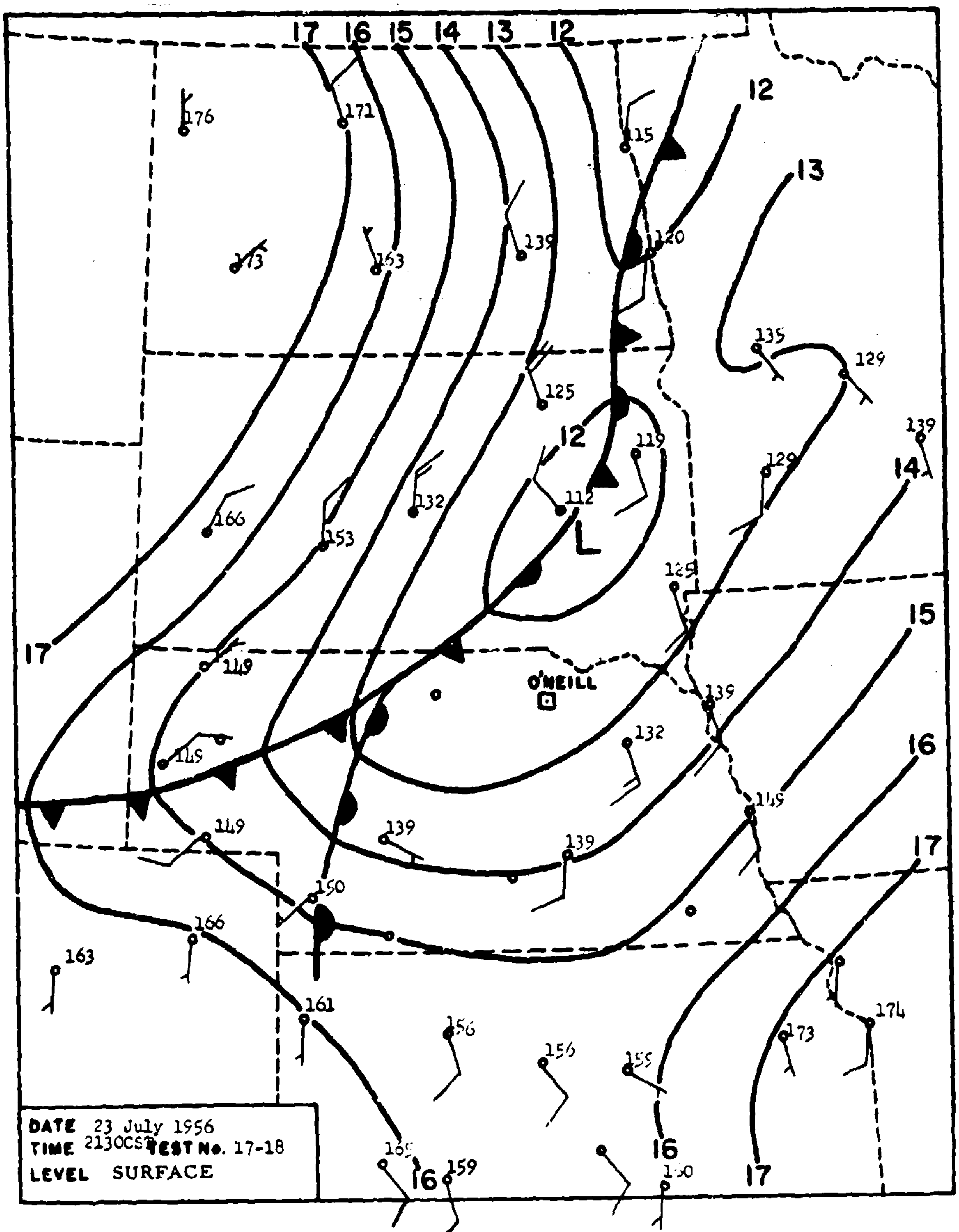
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LEVEL SURFACE
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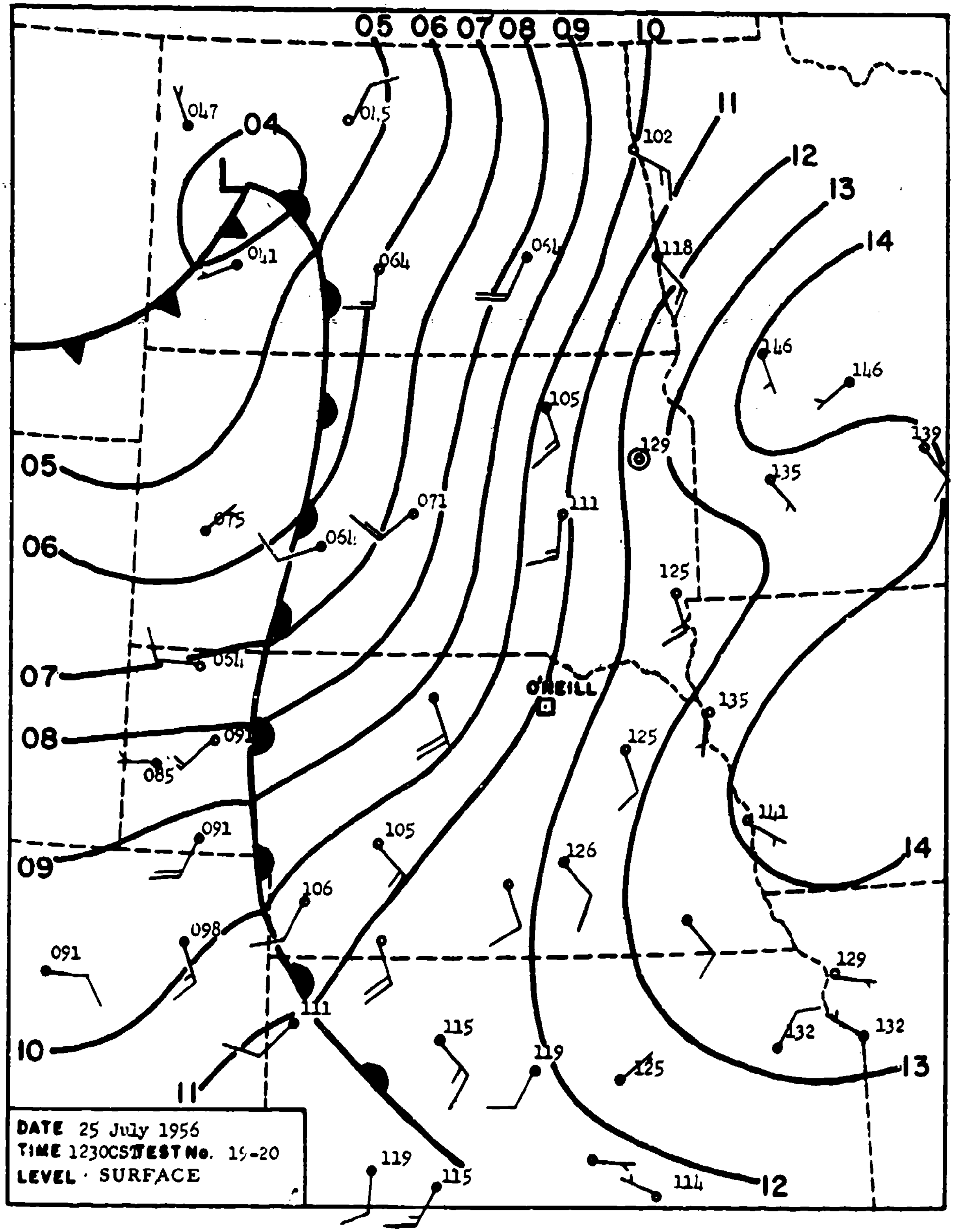
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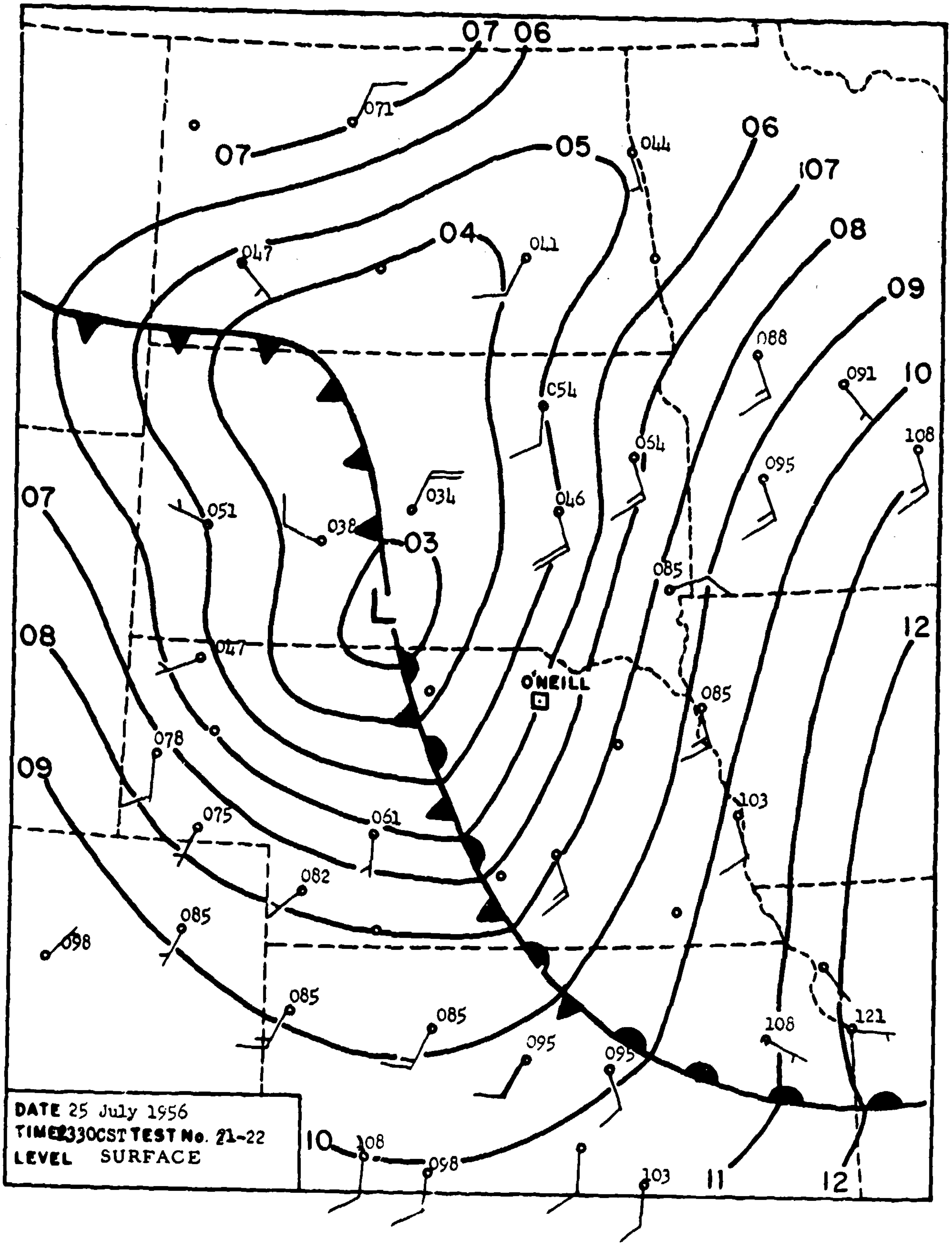
LEVEL · SURFACE



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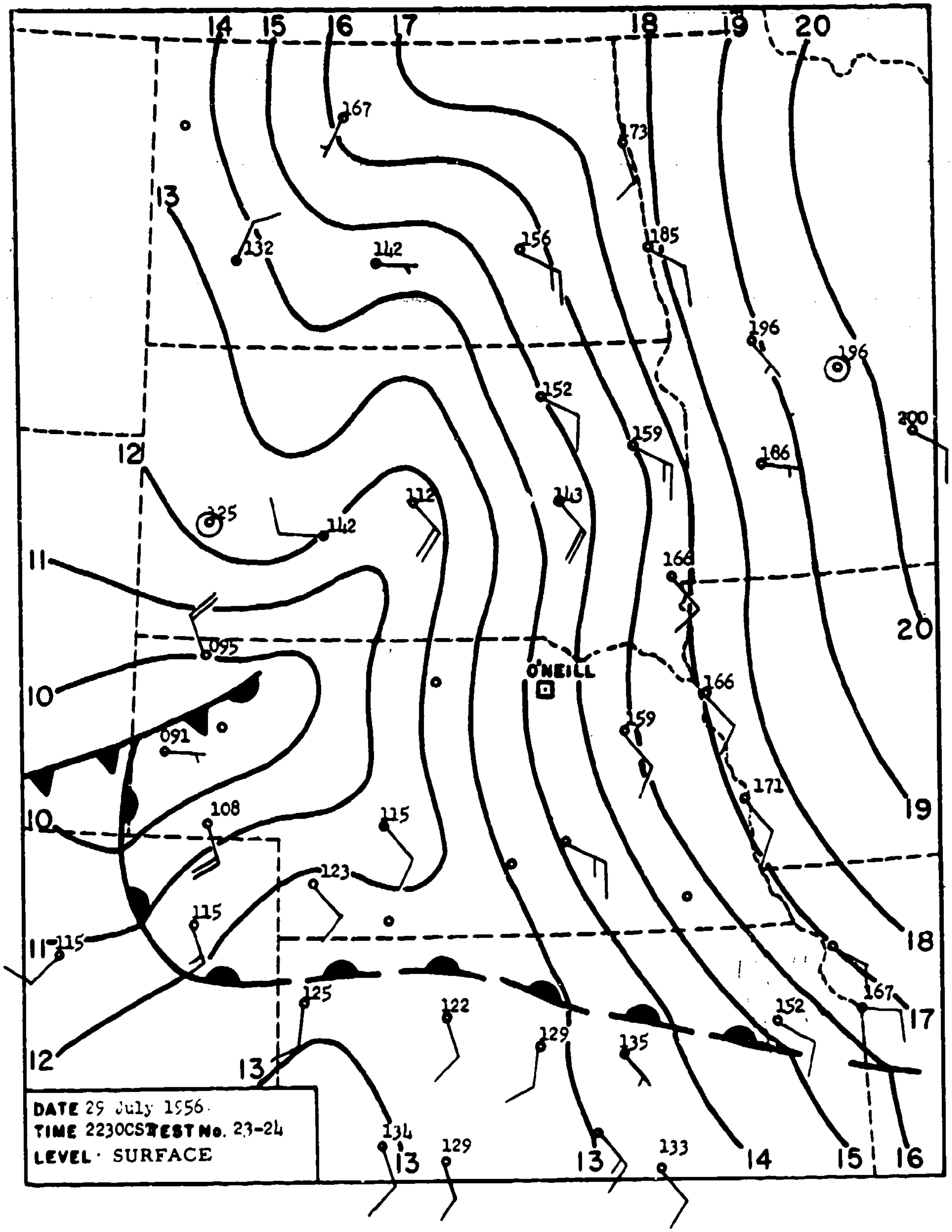
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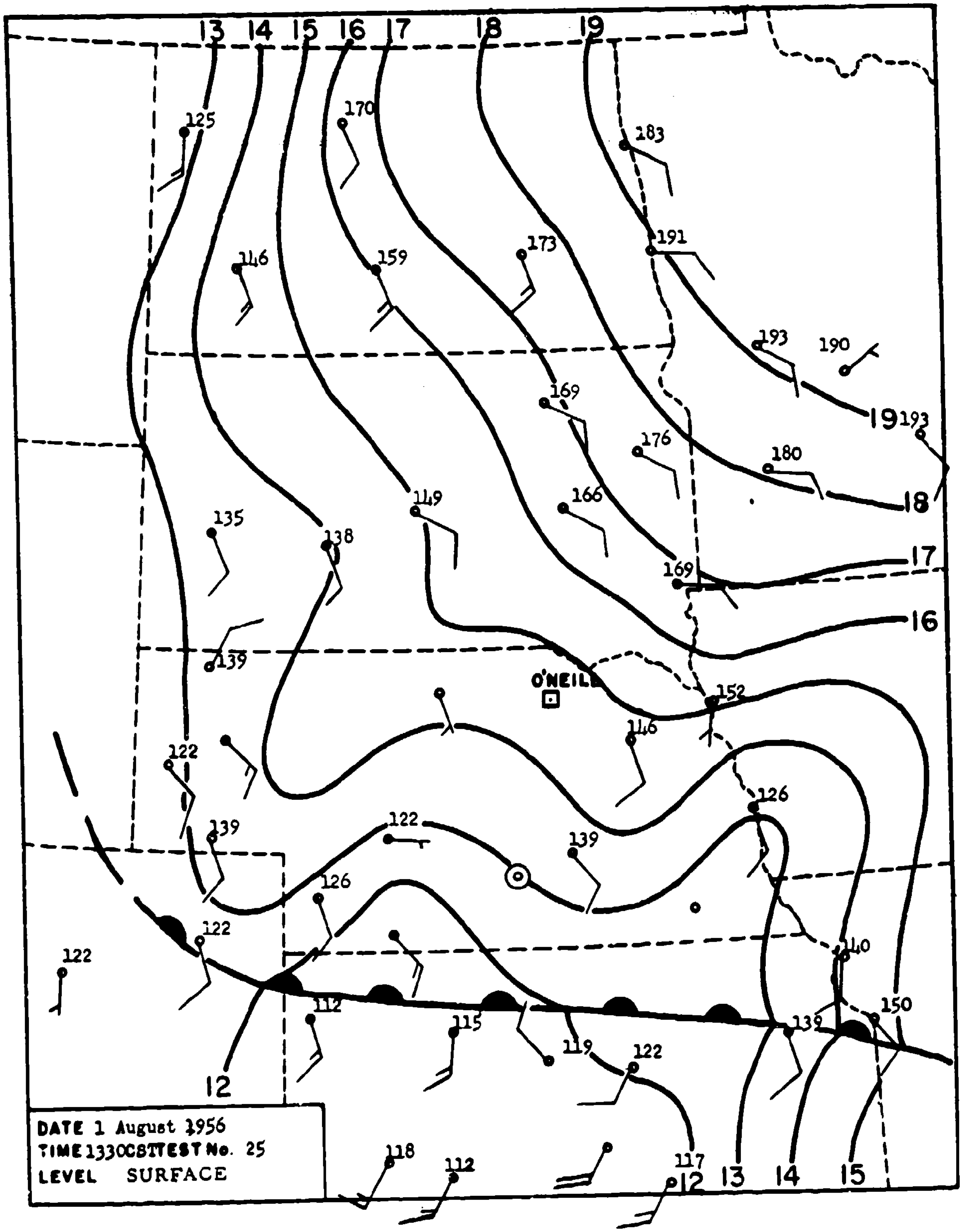
LEVEL · SURFACE



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DATE 1 August 1956
TIME 1330CST TEST No. 25
LEVEL SURFACE
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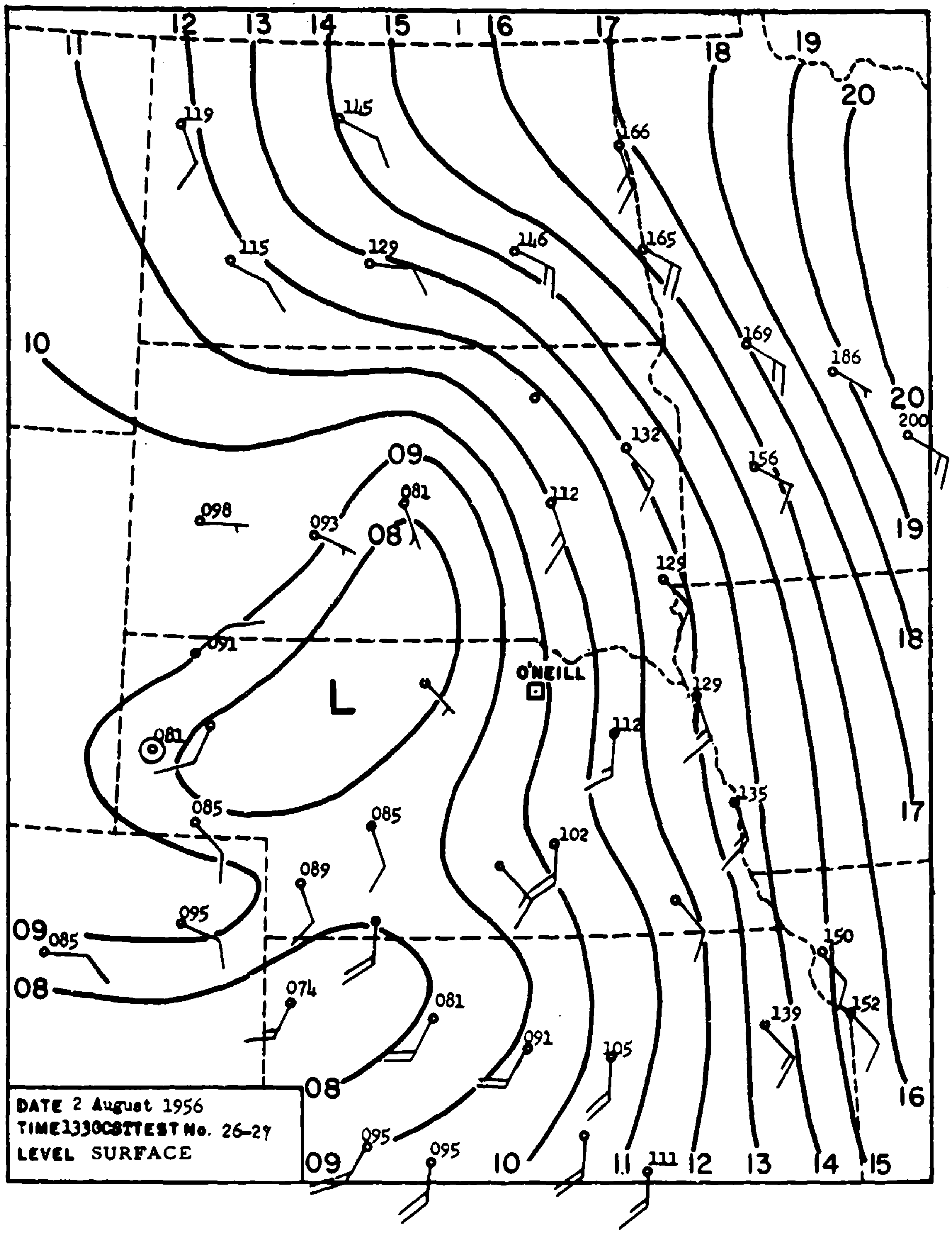
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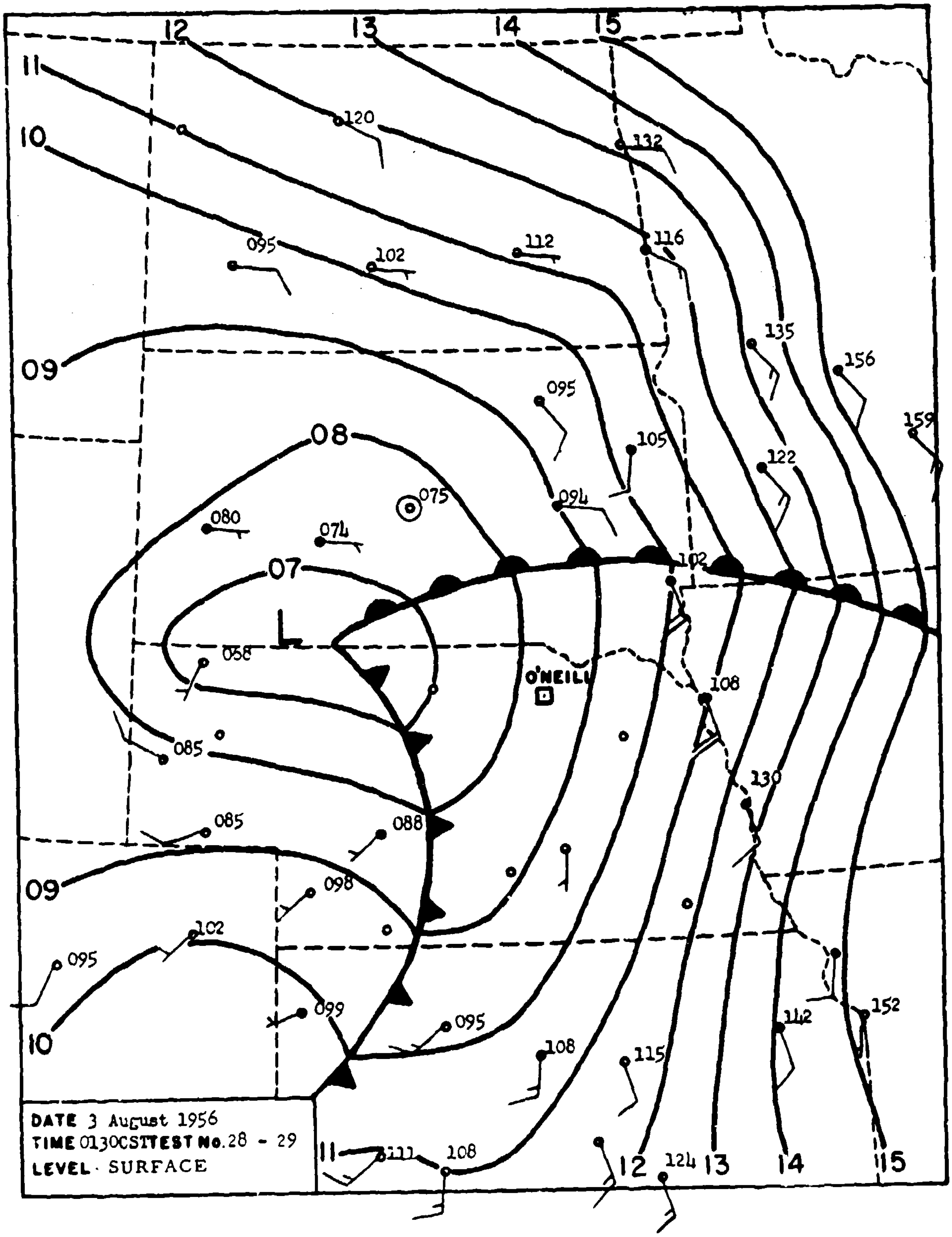

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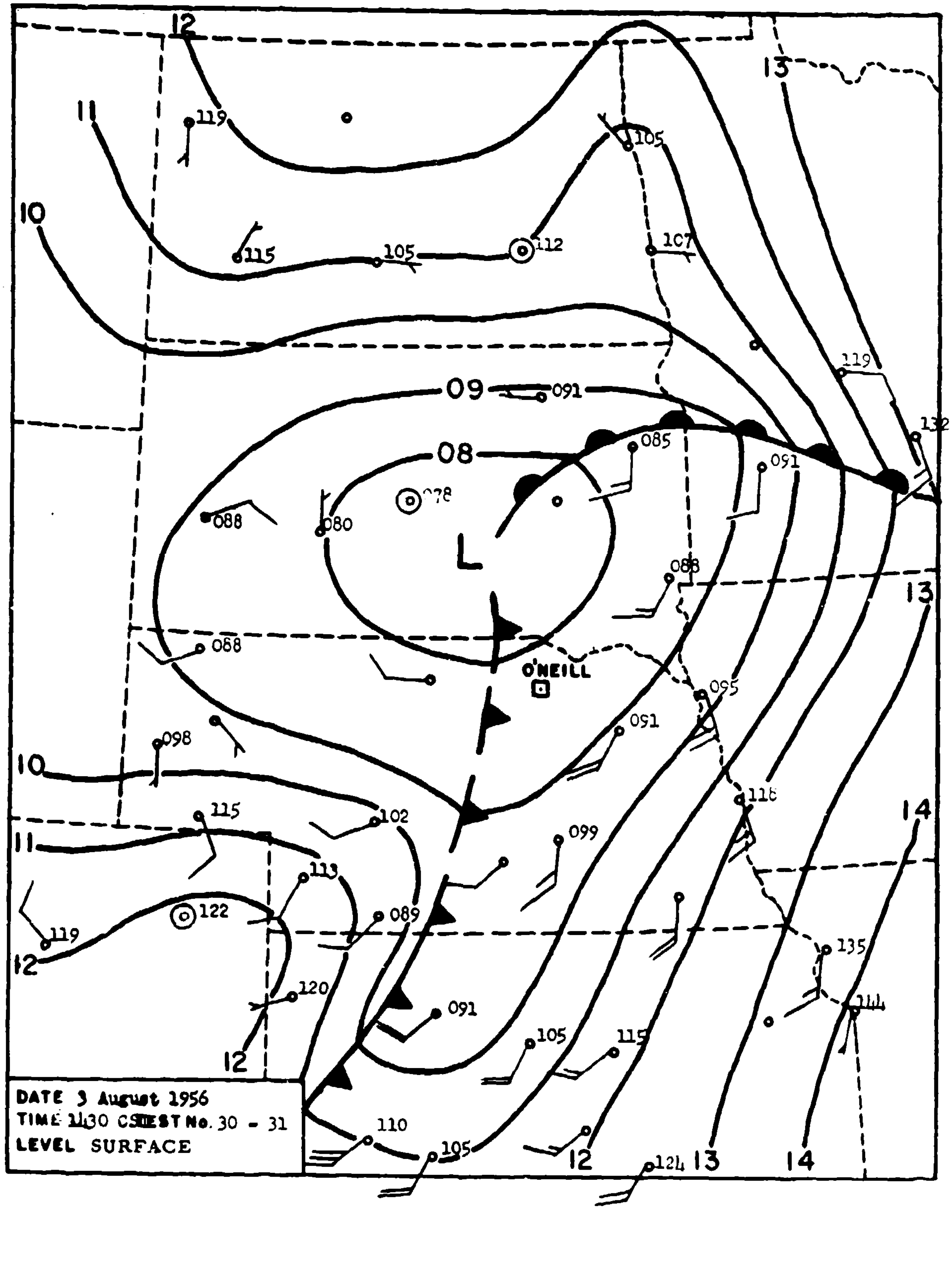

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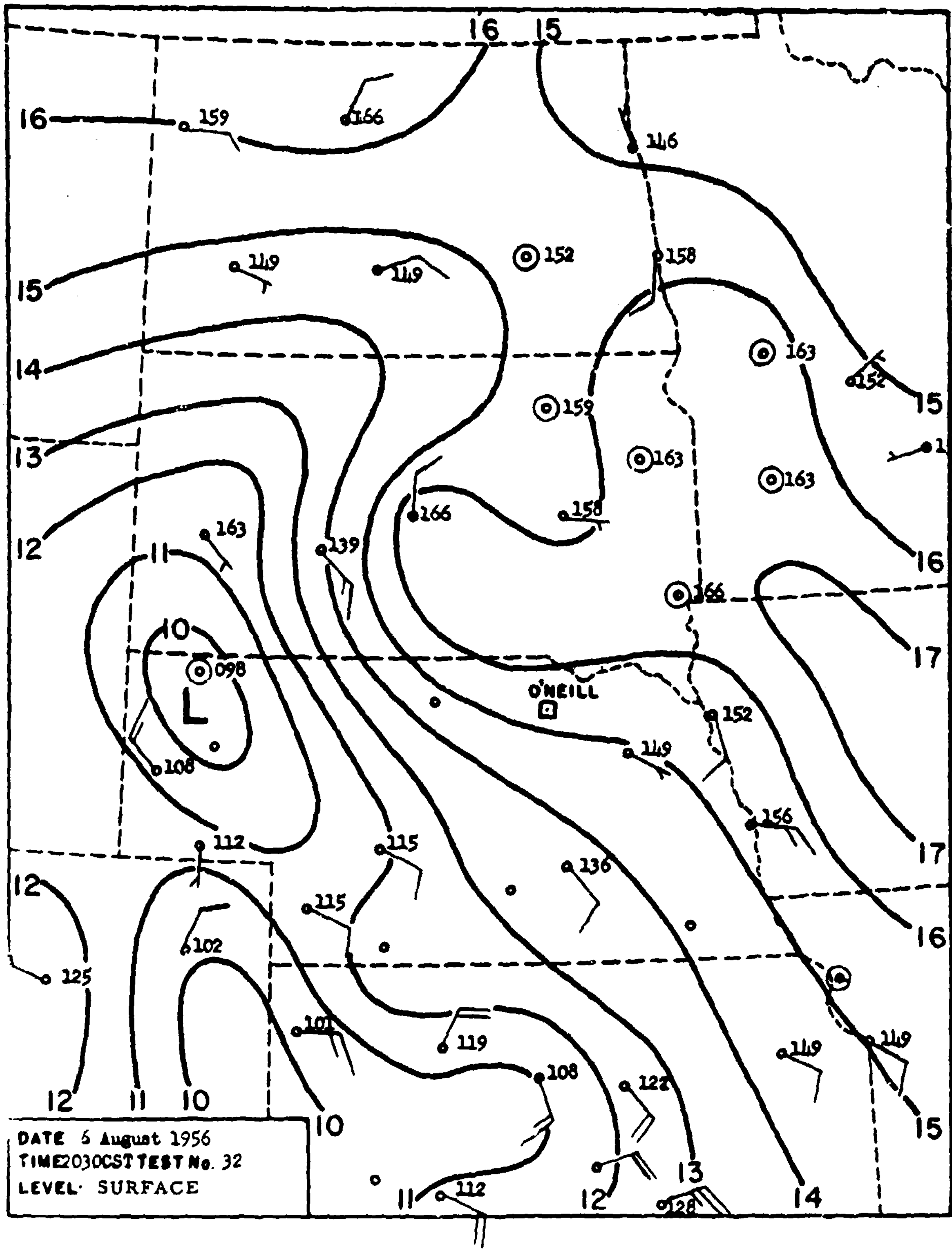

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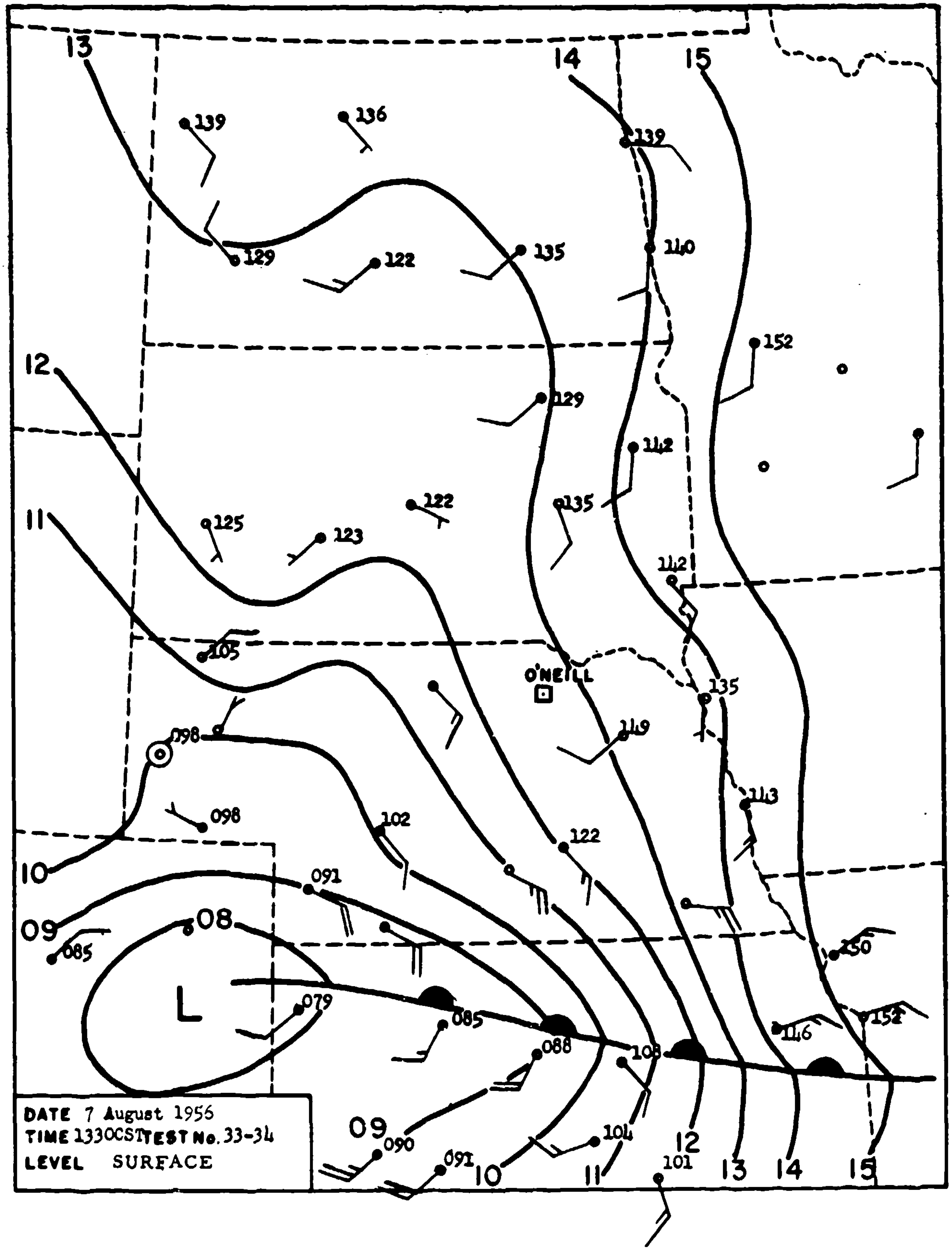
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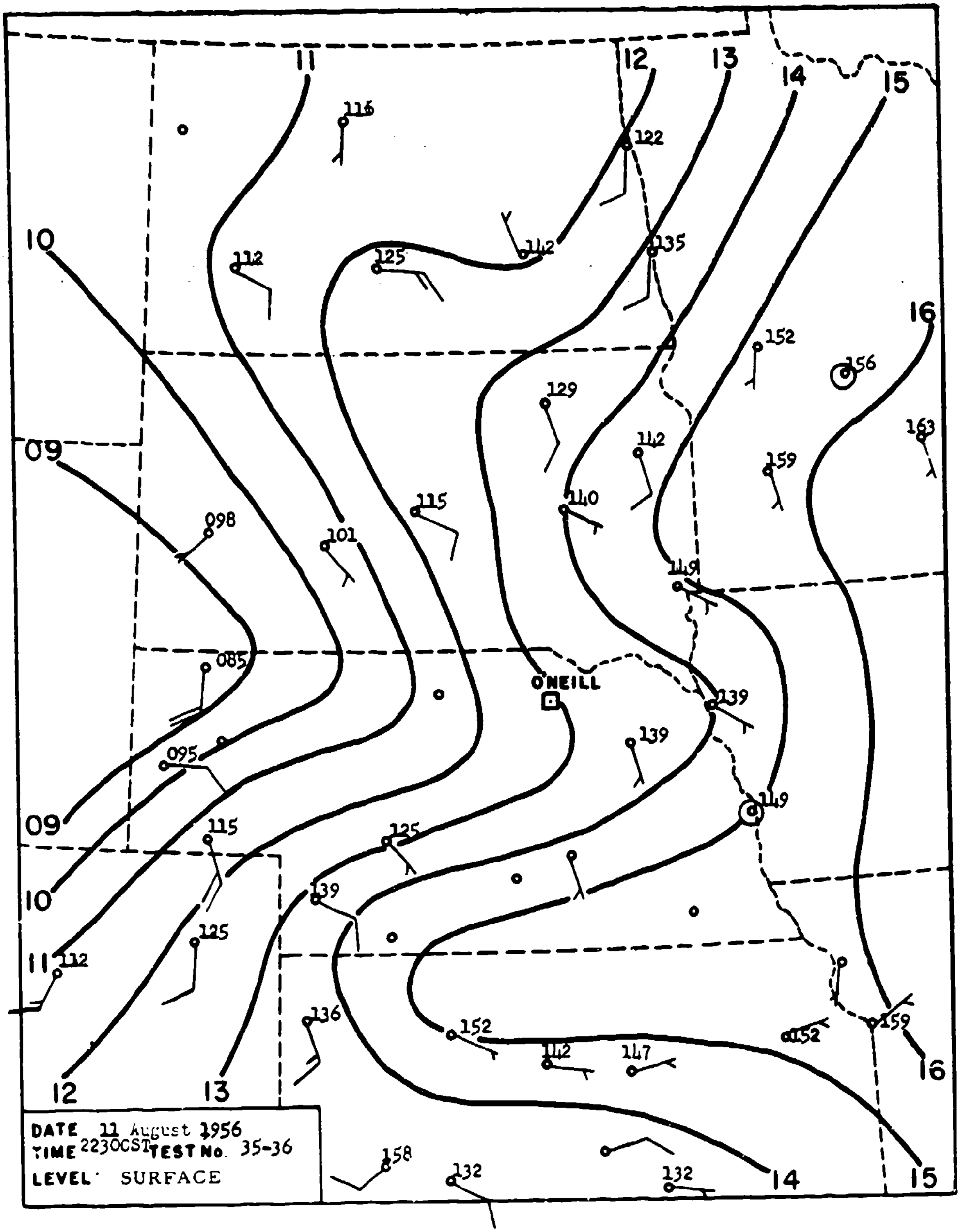
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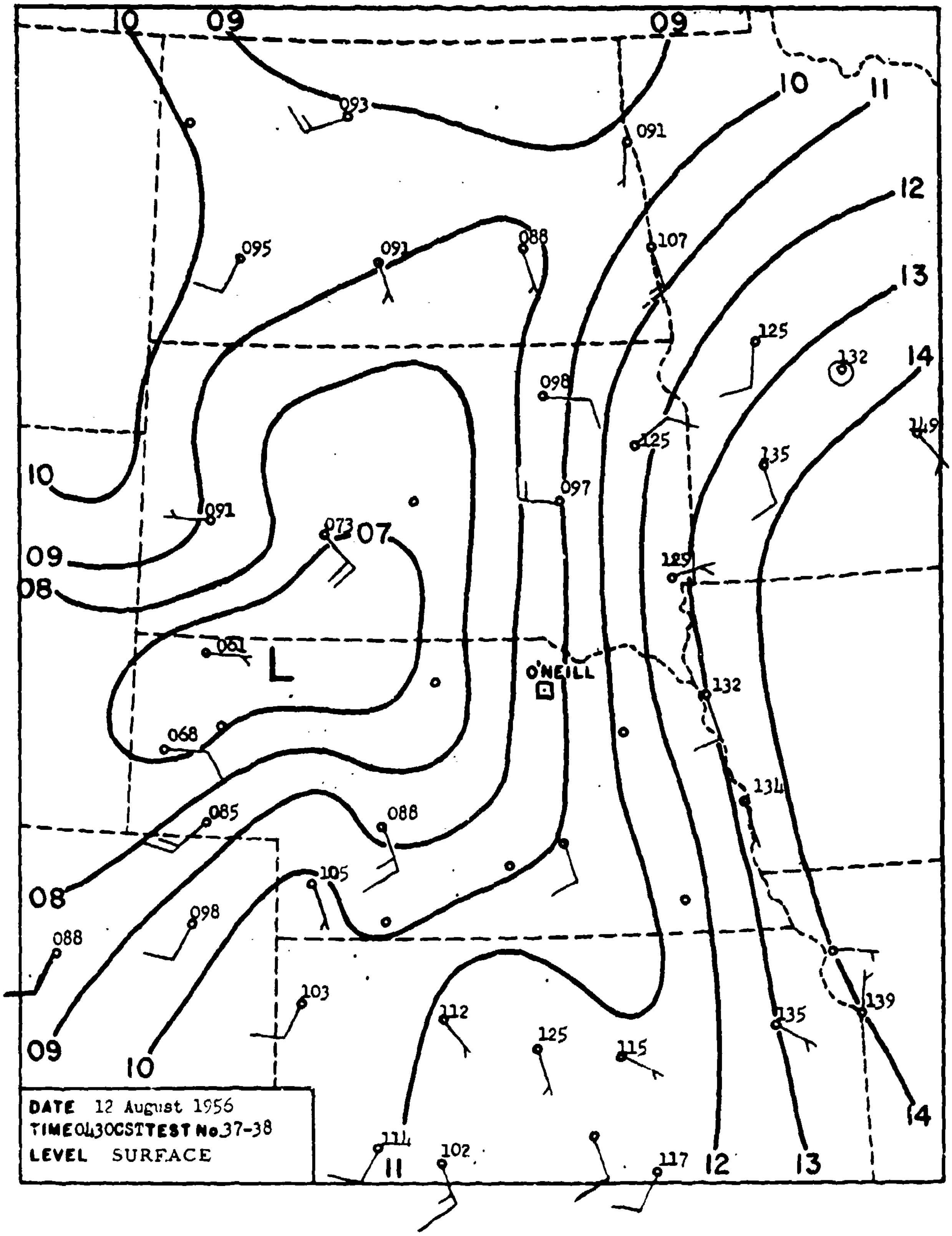
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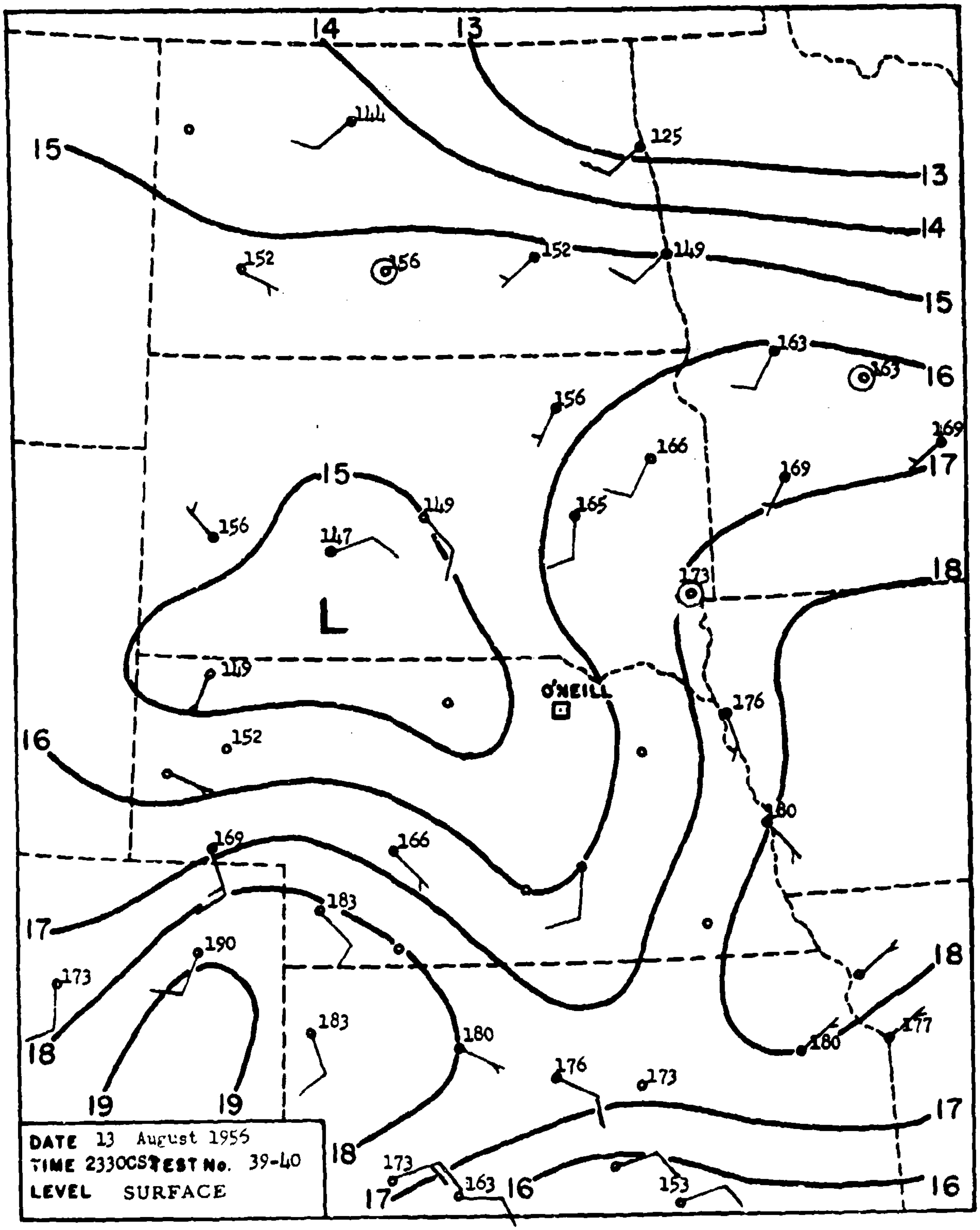
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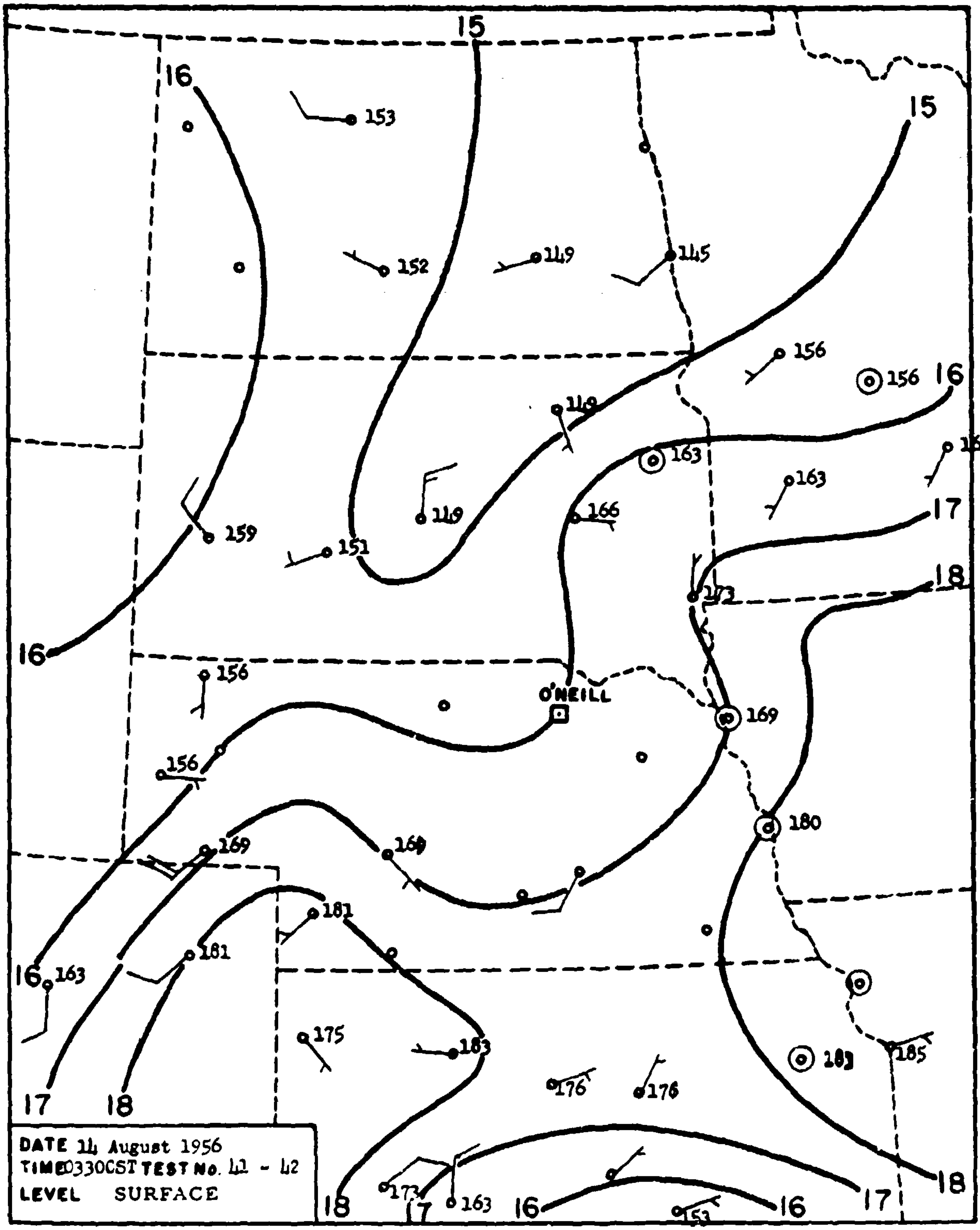
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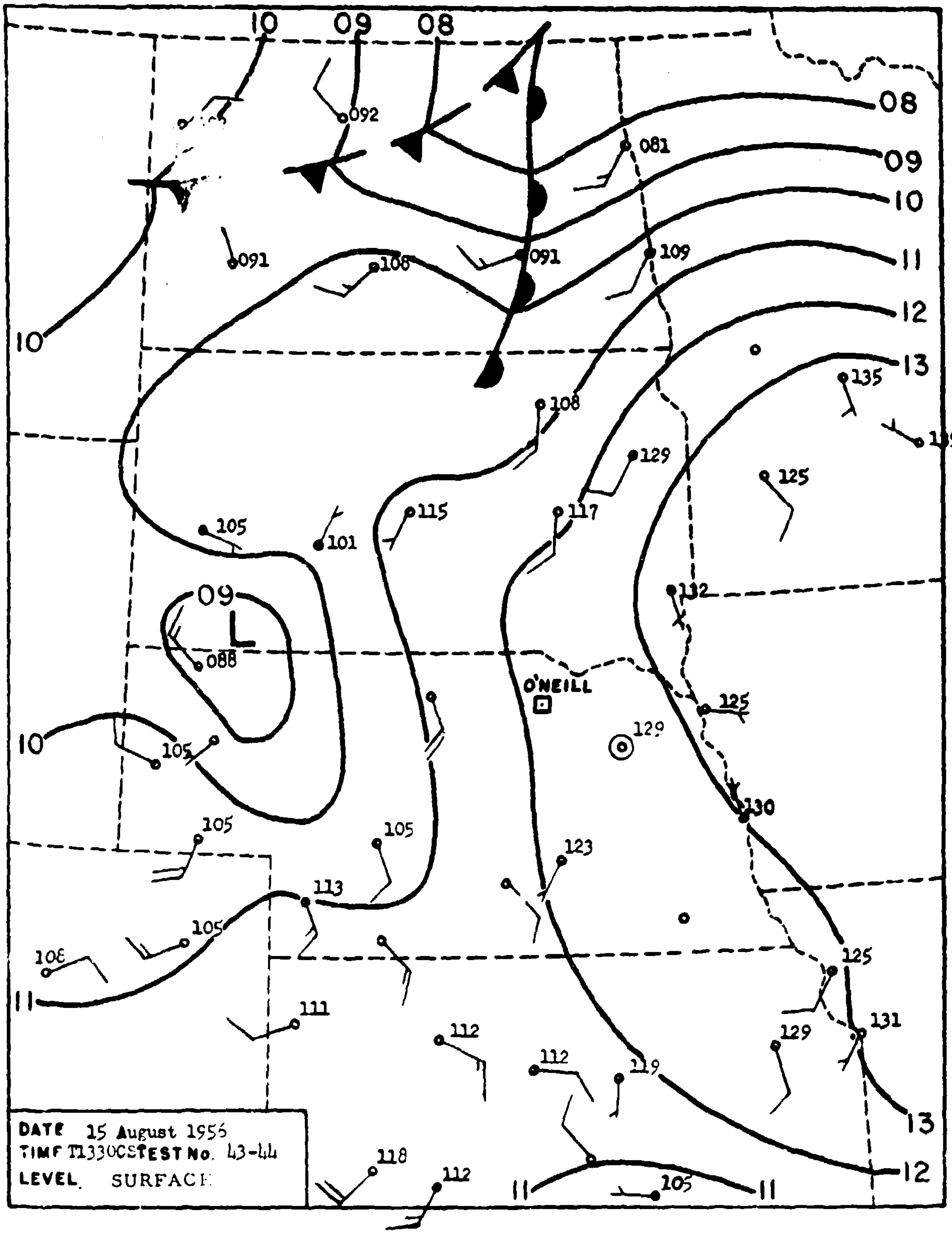
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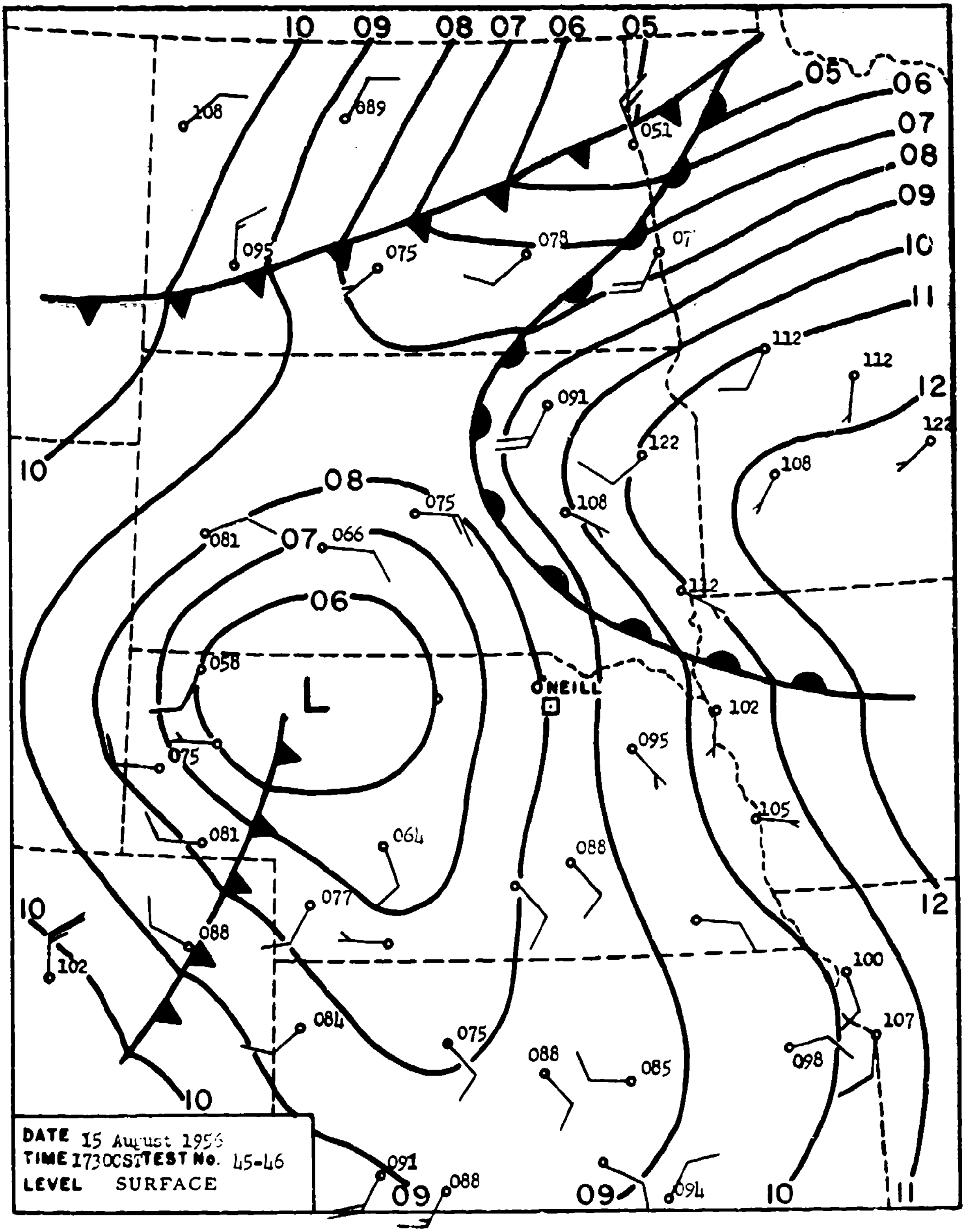
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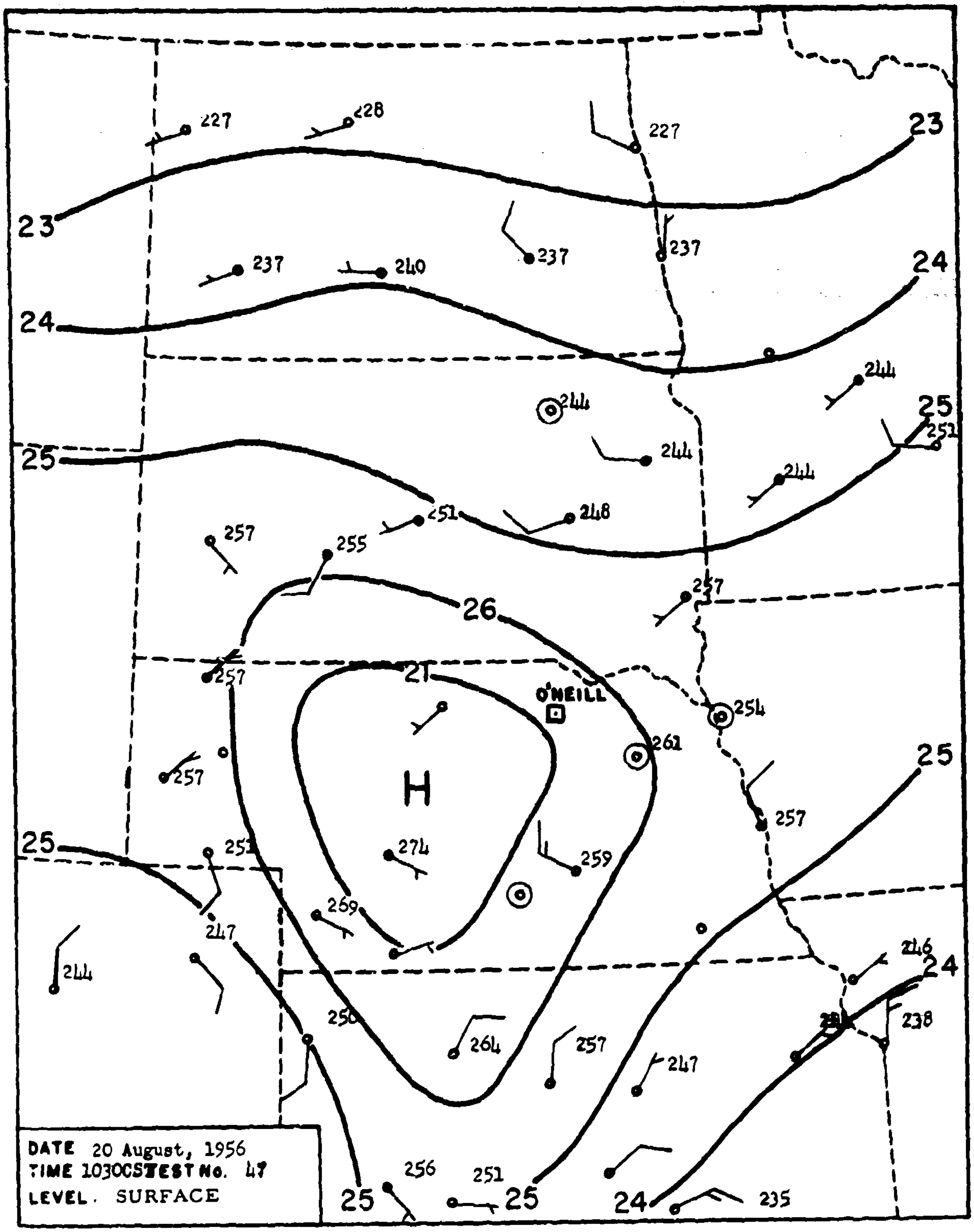
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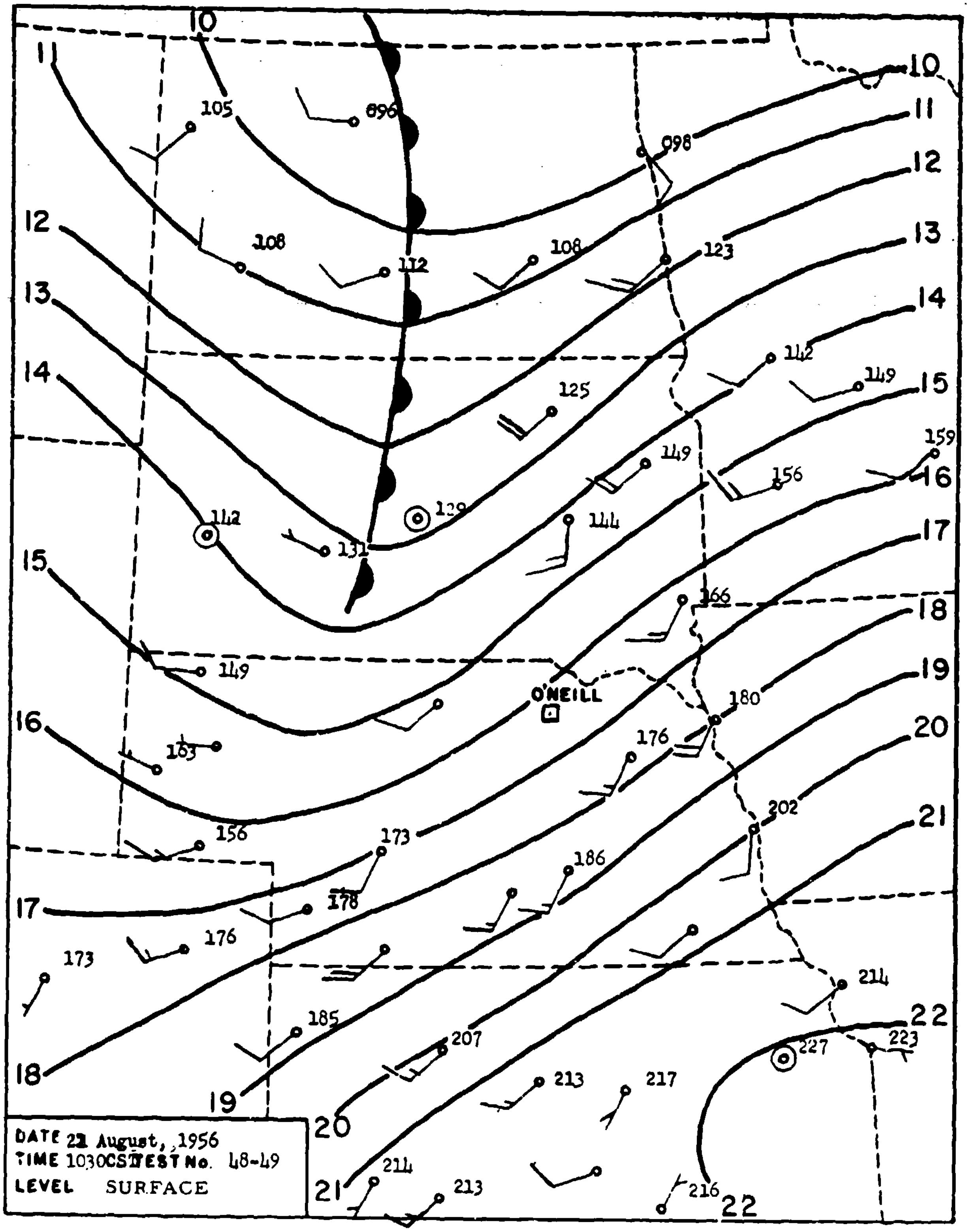
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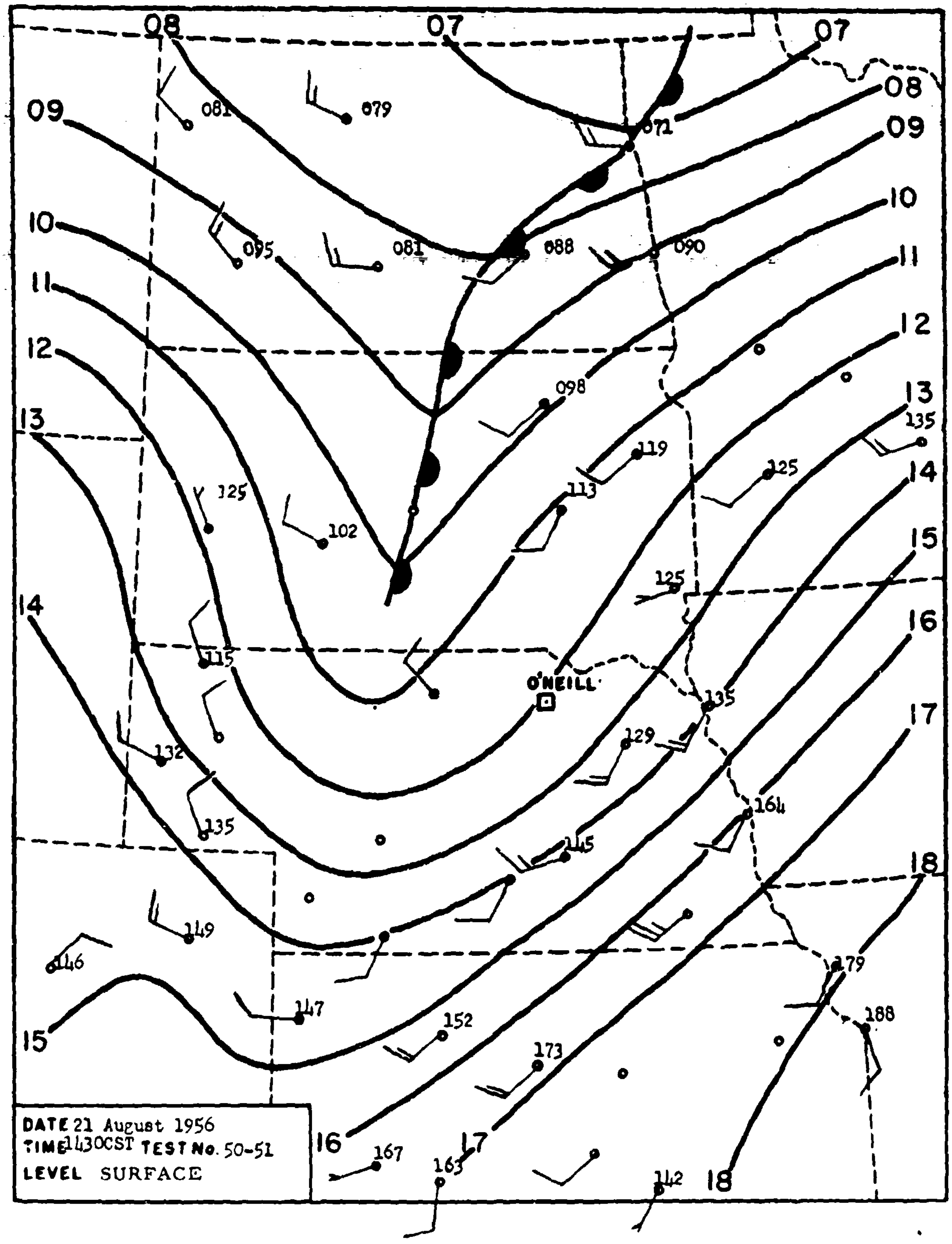

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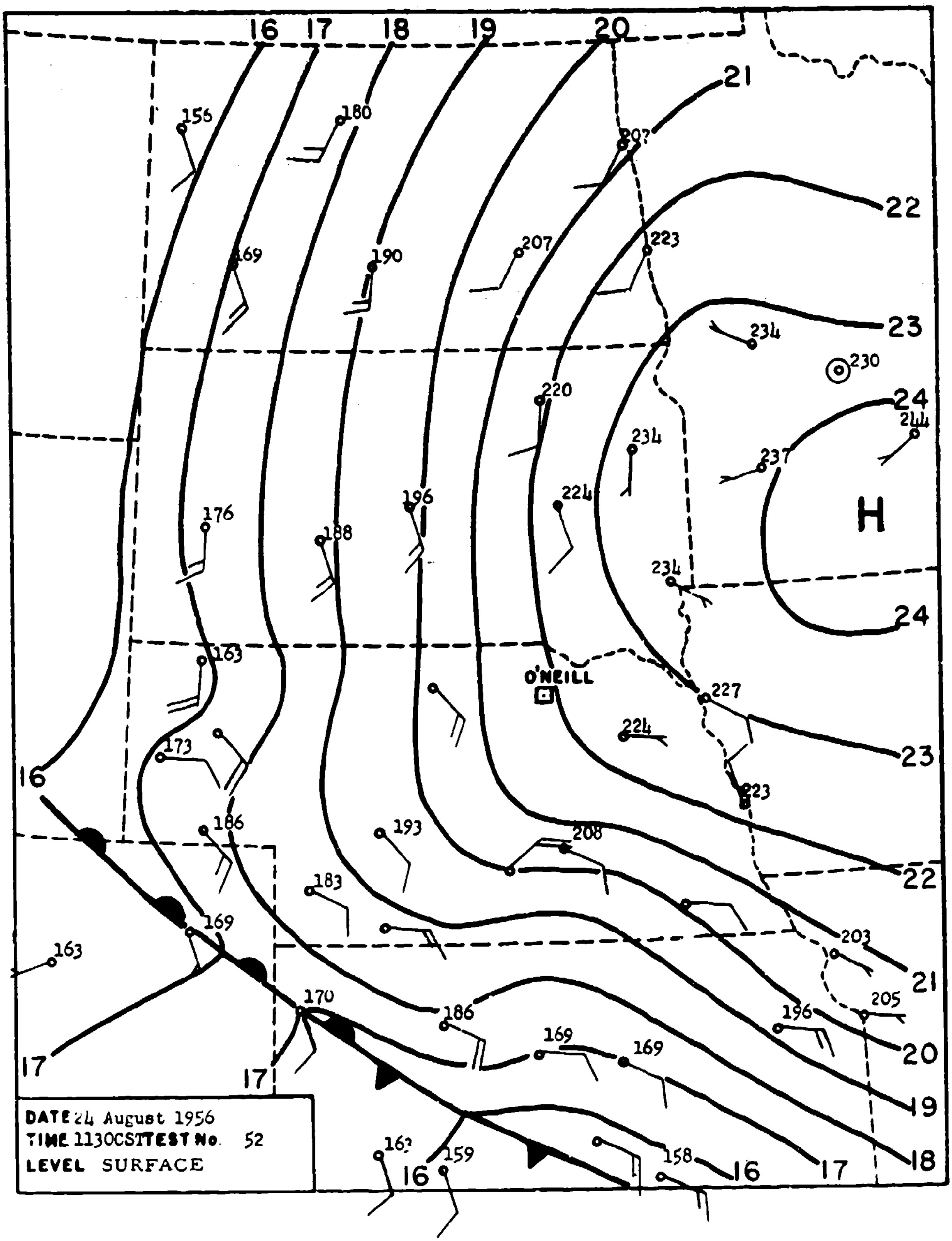
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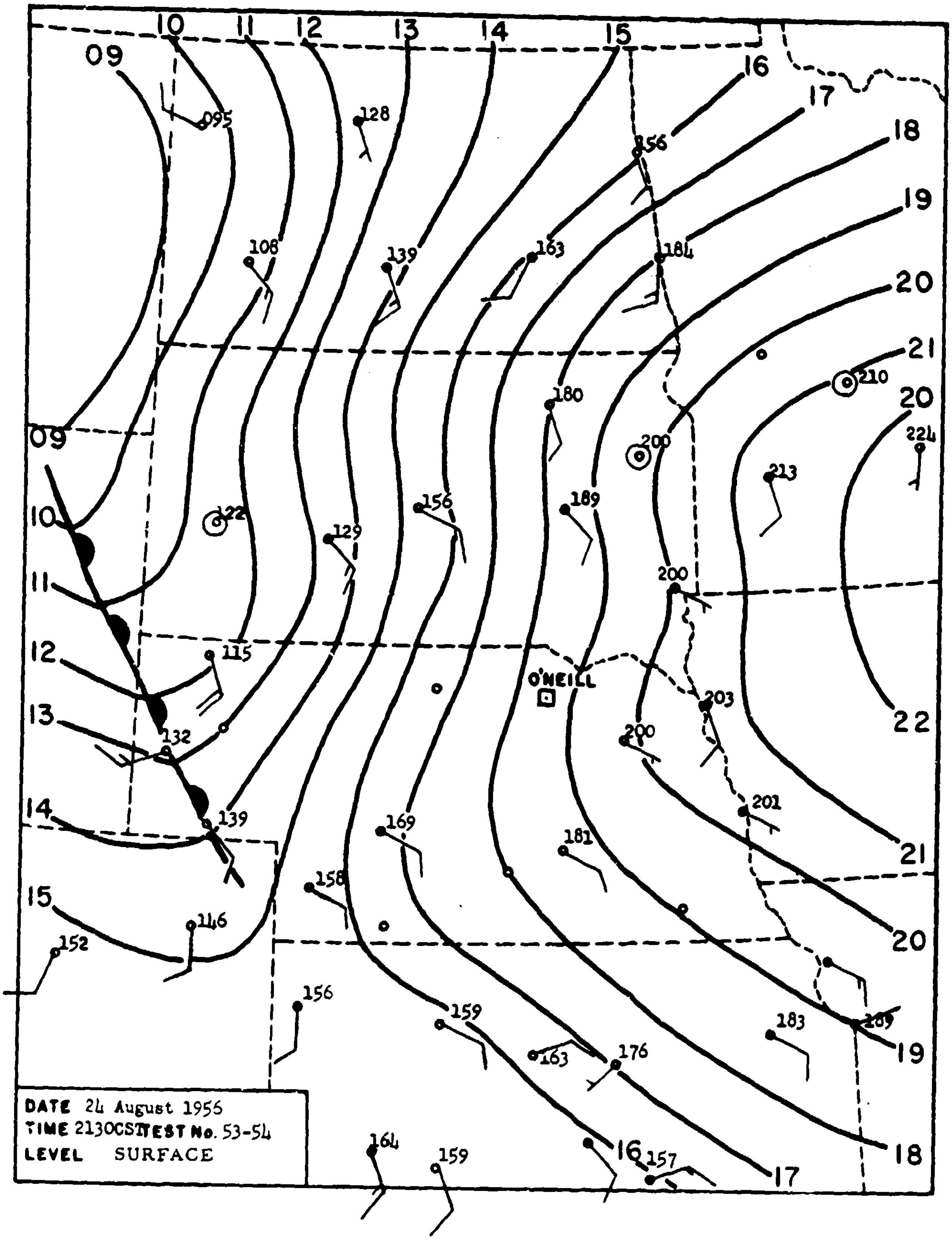

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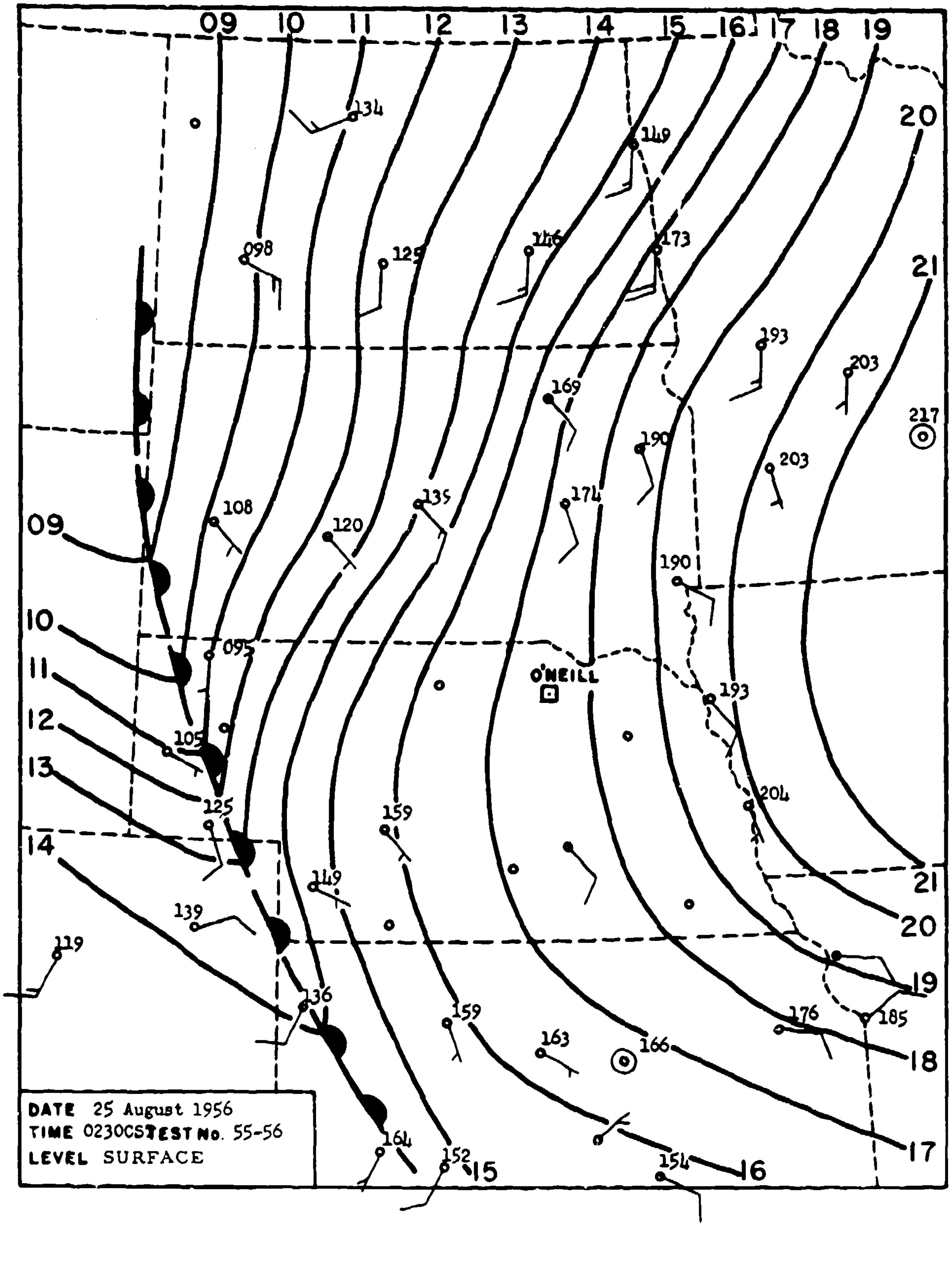

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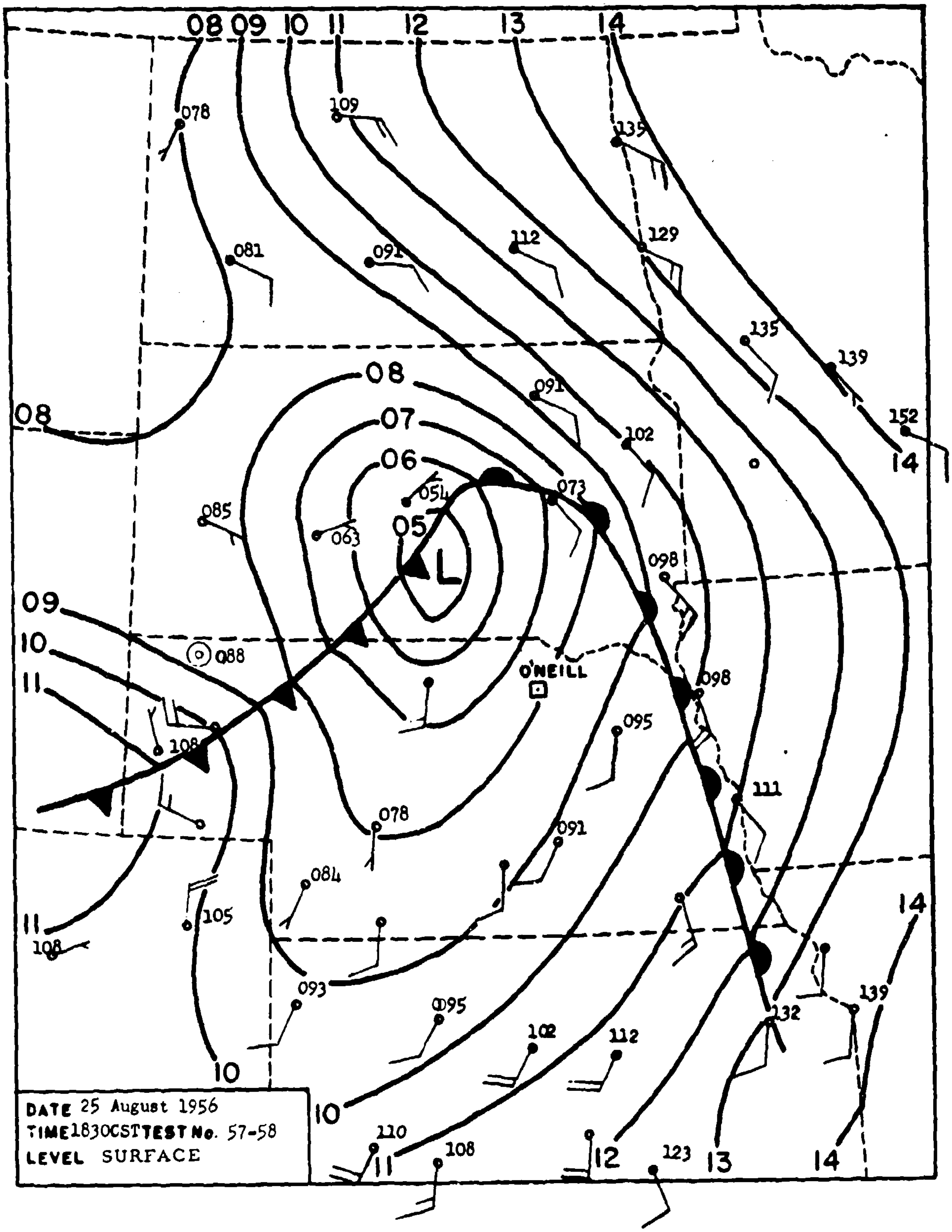
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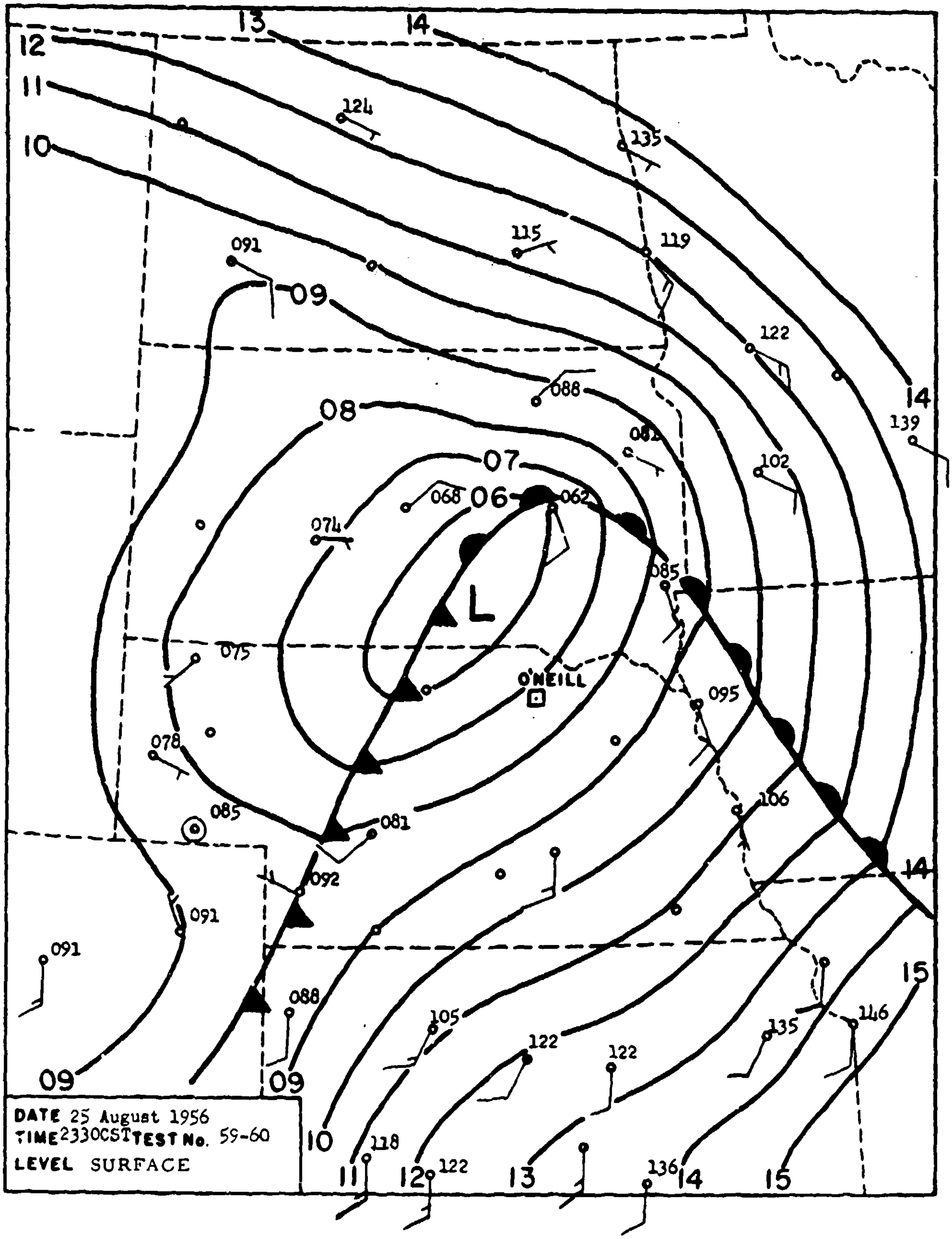
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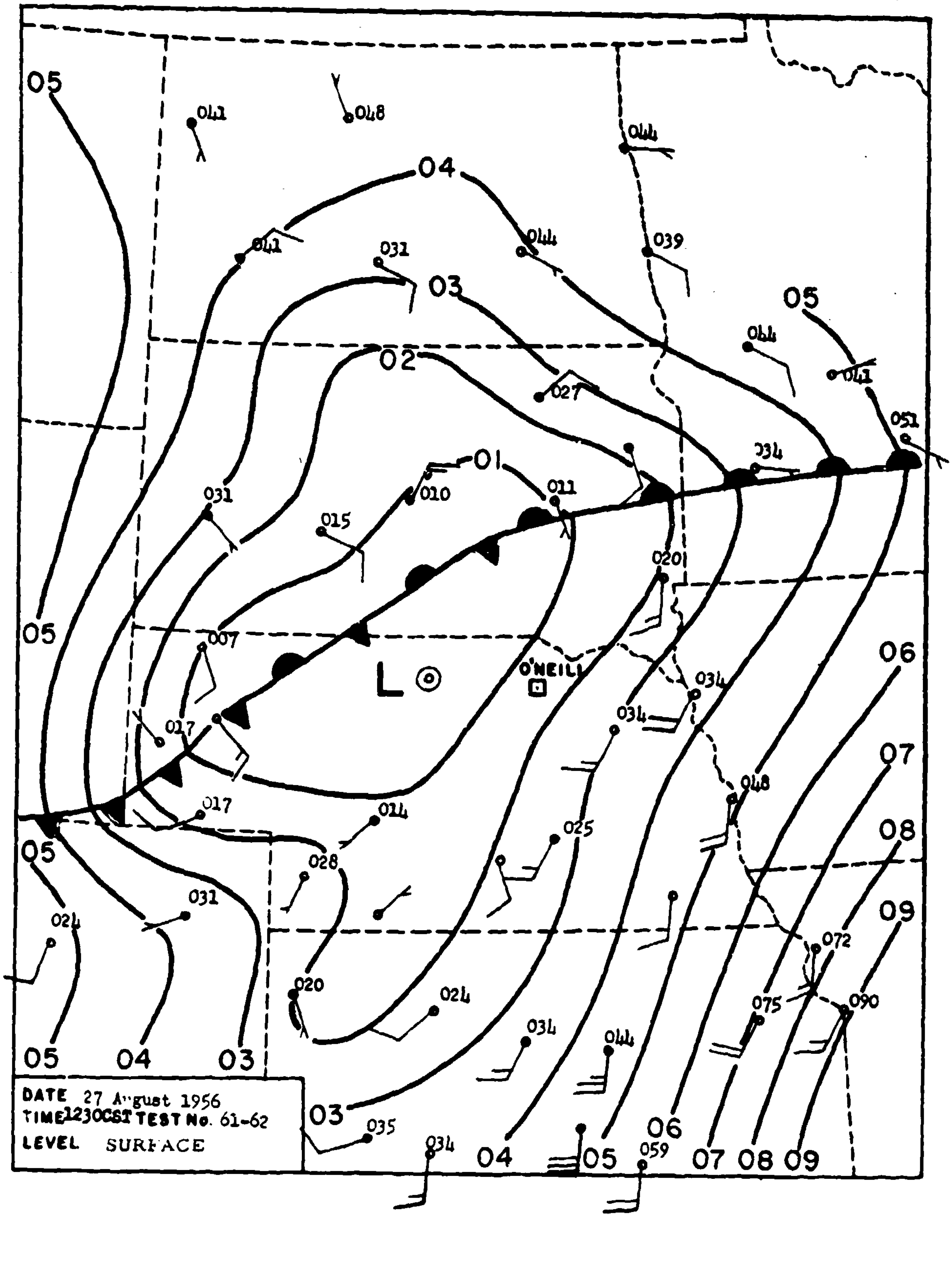
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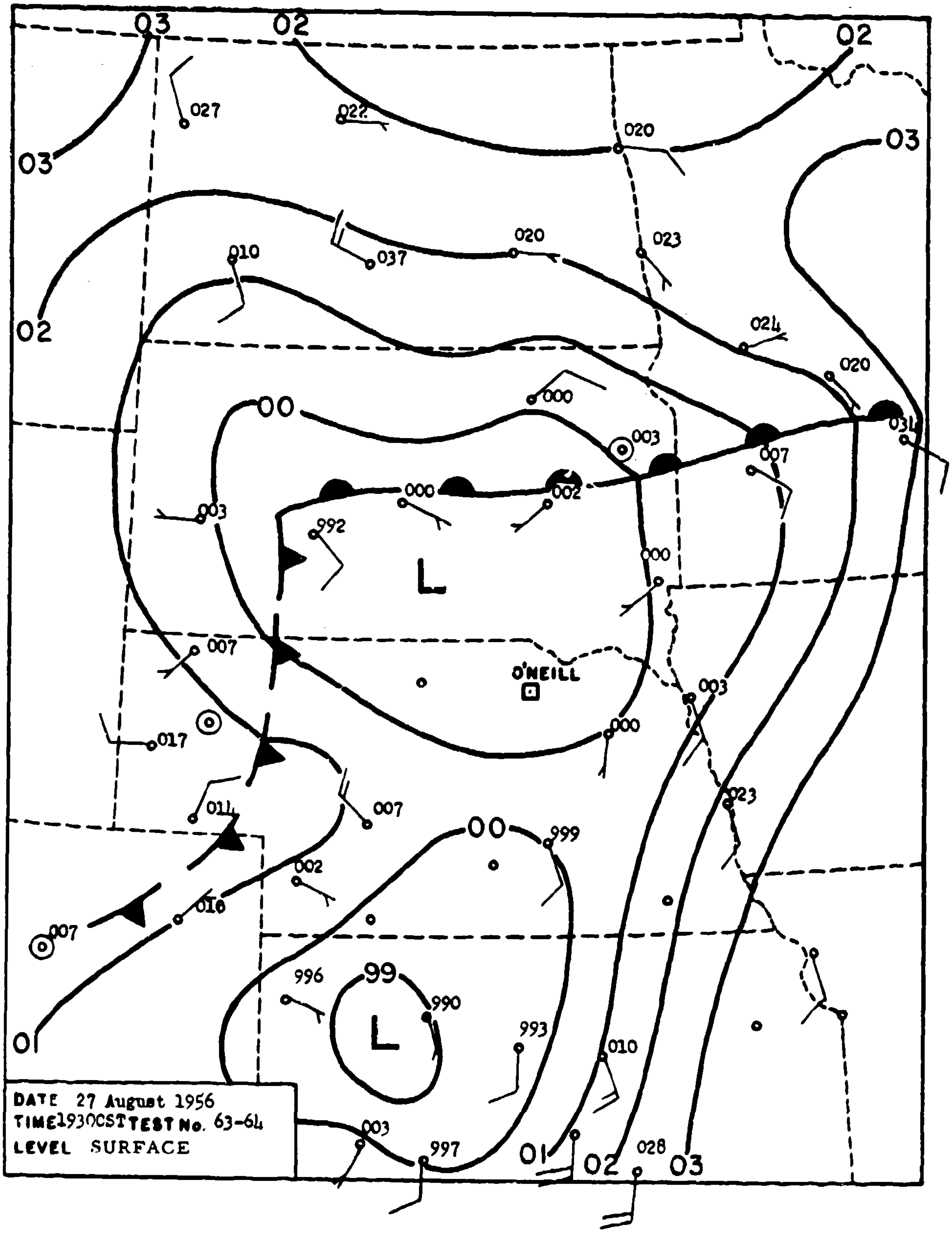

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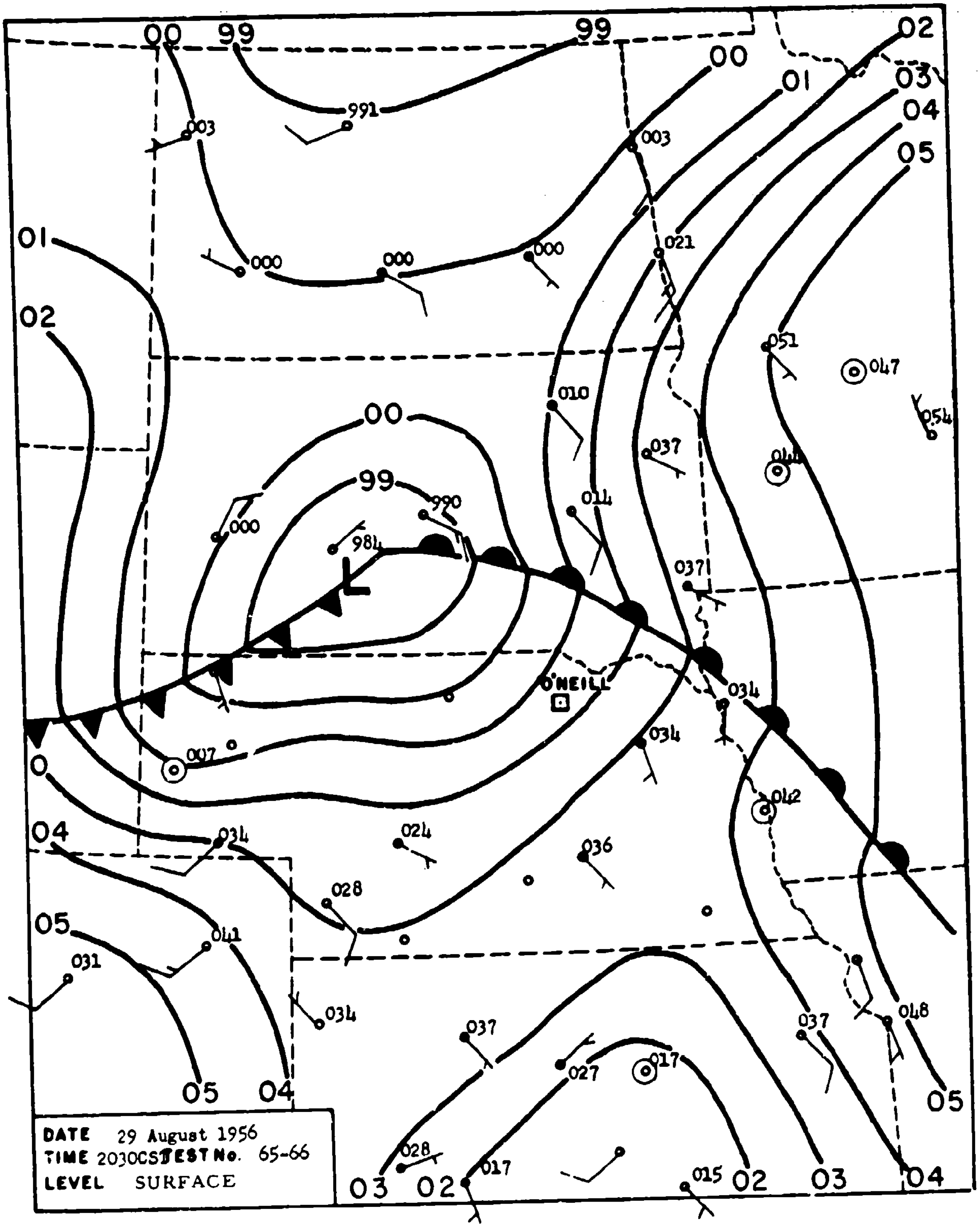
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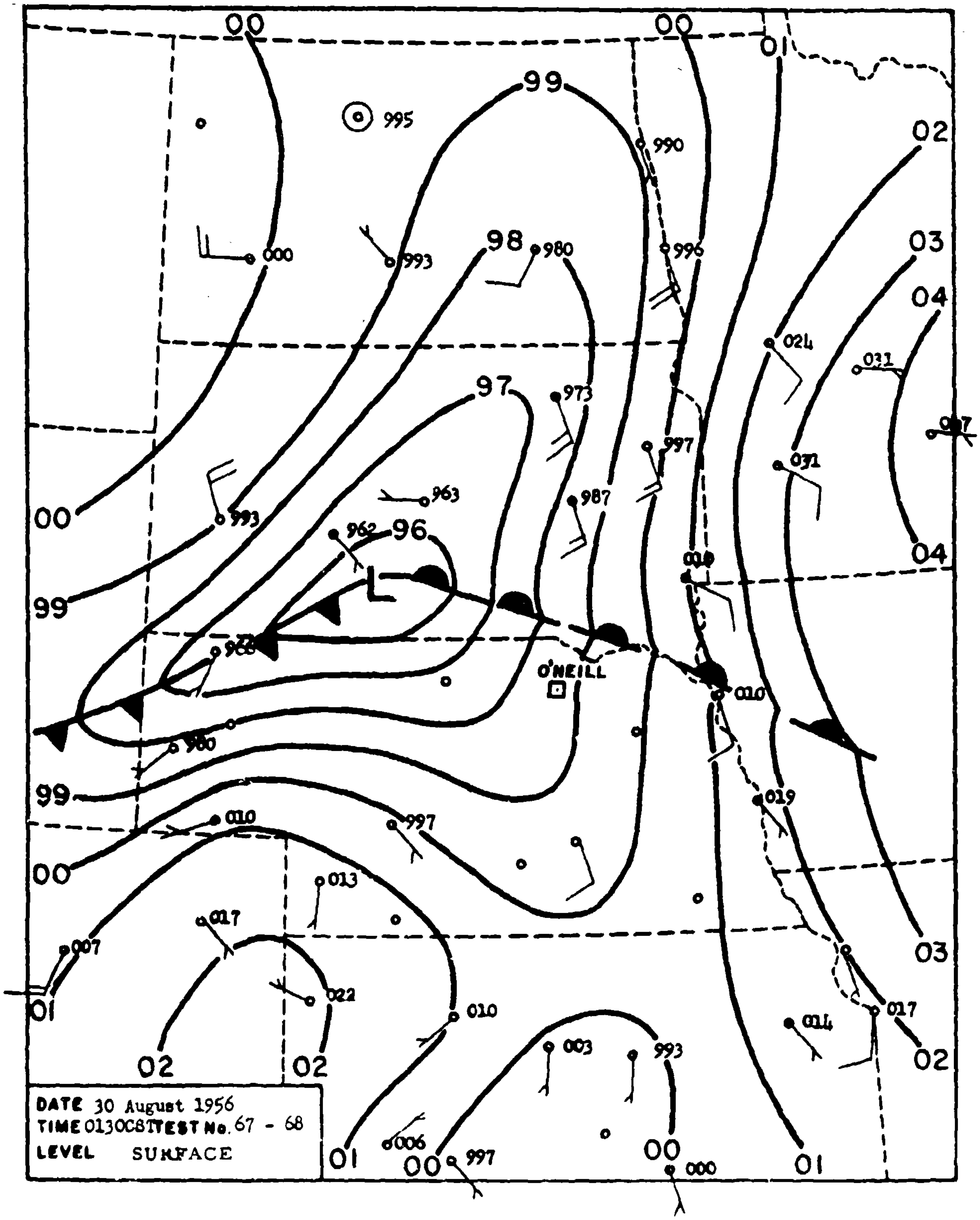
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CHAPTER 5
DIFFUSION MEASUREMENTS DURING PROJECT PRAIRIE GRASS

H. E. Cramer, F. A. Record, and H. C. Vaughan
Massachusetts Institute of Technology

5.1 Introduction

The diffusion measurements obtained during Project Prairie Grass comprise average or time-mean concentrations determined at selected points downwind from a continuous point source of sulfur-dioxide gas located near ground level. Sulfur dioxide is relatively inexpensive and readily available; the sampling technique is based on firmly established and extremely simple physical principles, and is capable of resolving minute concentrations of the order of 0.01 parts per million. The sampling network utilized midget impingers mounted at a height of 1.5 m along five semicircular, concentric arcs located within 800 m of the release-point. Limited vertical sampling was carried out along the 100-m arc by means of impingers mounted at 9 levels on 6 lightweight towers. Electrically-operated vacuum units suitably positioned within the sampling network provided aspiration for the impingers. During the diffusion experiments, air was drawn into the impingers through short sections of capillary tubing and bubbled through a dilute hydrogen-peroxide solution. Sulfur dioxide present in the air samples combined with the hydrogen peroxide to form sulfuric acid. Average gas concentrations were determined from laboratory measurements of the electrical conductivity of the aspirated solutions.

Data are available for approximately 70 diffusion experiments carried out in a wide variety of weather conditions. Approximately half the data refer to unstable (daytime) thermal stratification and the remainder were obtained at night in the presence of temperature inversions. In the experiments, the sampling networks were put in operation just before the start of the gas release which lasted for 10 minutes; operation of the networks continued for several additional minutes after

the end of the gas release to permit the wind to transport the tracer beyond the 800-m arc. A detailed description of the apparatus and techniques used during the diffusion experiments is given below.

5.2 Generation of the Tracer

The basic features of the sulfur-dioxide generator are shown schematically in Figure 5.1 and a photograph of the field installation of the generating equipment is presented in Figure 5.2. Operation of the generator may be described as follows: Liquid sulfur dioxide from an inverted 150-lb cylinder was vaporized in a specially-constructed chamber immersed in 150 gallons of hot water contained in a large circular tank. Approximately 3×10^6 calories were required to vaporize the sulfur dioxide released during each experiment. This amount of heat must be supplied from an external source to maintain a constant rate of emission consistent with efficient source operation. Otherwise, the attendant rapid cooling of the gas-liquid interface produces excessive pressure decreases throughout the system and a consequent steady decrease in the rate of emission. The requisite heat transfer was facilitated by continuous circulation of the heated water in the large tank through a 100-ft coil of copper tubing placed inside the vaporization chamber; thermostatically-controlled immersion heaters rated at 10 kw maintained the water temperature at approximately 50°C. It was frequently necessary, during the latter part of the daytime gas releases, to add liquid sulfur dioxide to the vaporization chamber to maintain the required emission rate; electric strip heaters attached to the exterior of the inverted steel cylinder aided in effecting this transfer. From the vaporizer, the gas flowed through a pressure regulator and an adjustable valve controlling the flow rate into a large ironcase meter (American Meter Company Type 500B). Total output registered on a special indicating dial at the top of the meter case. The gas meter was adjusted at the factory to read about 1 percent low with an accuracy of $\pm$ 0.5 percent. Pressure and temperature of the gas were measured both at the inlet and outlet

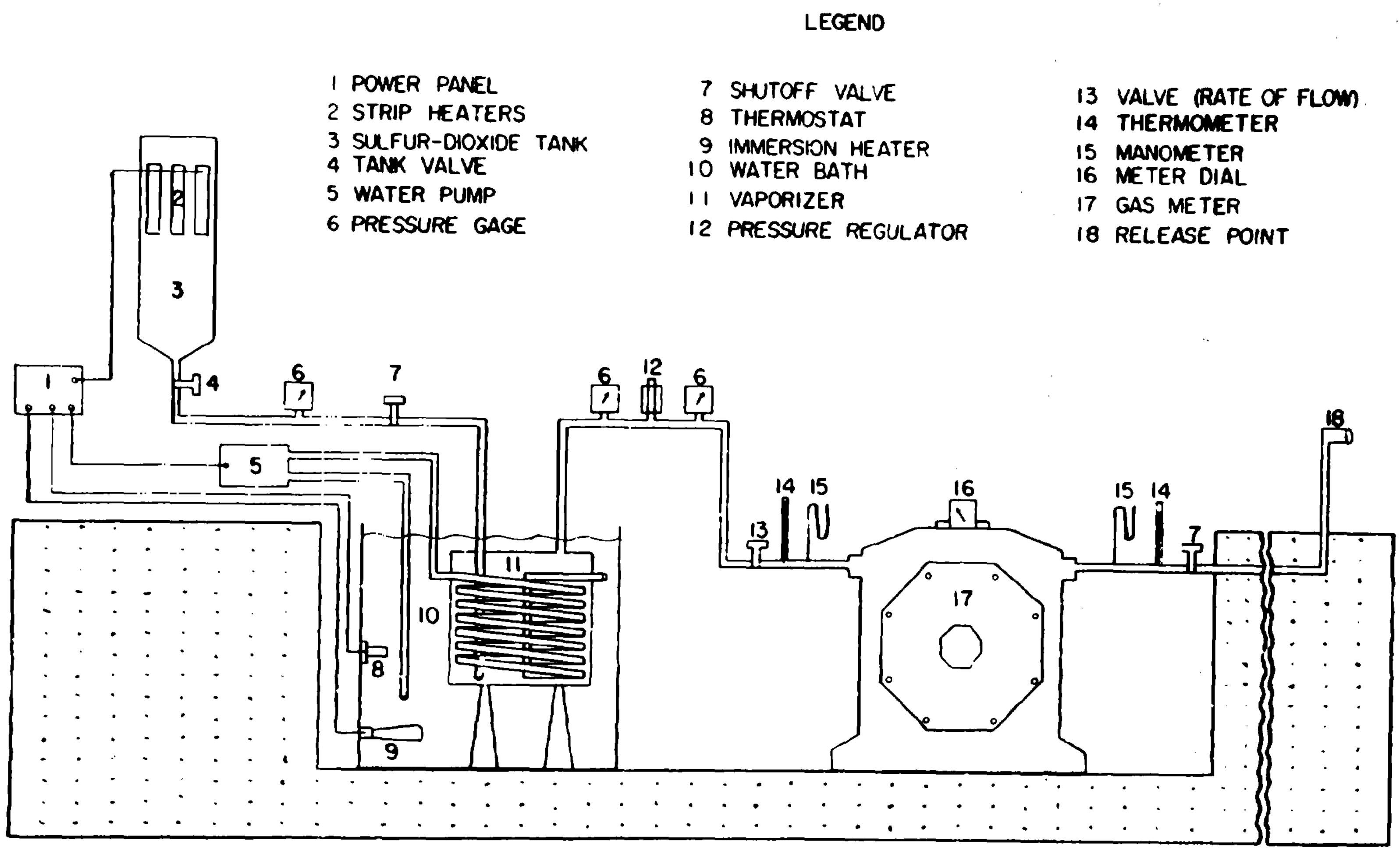

Figure 5.1 Schematic diagram of sulfur-dioxide generator.

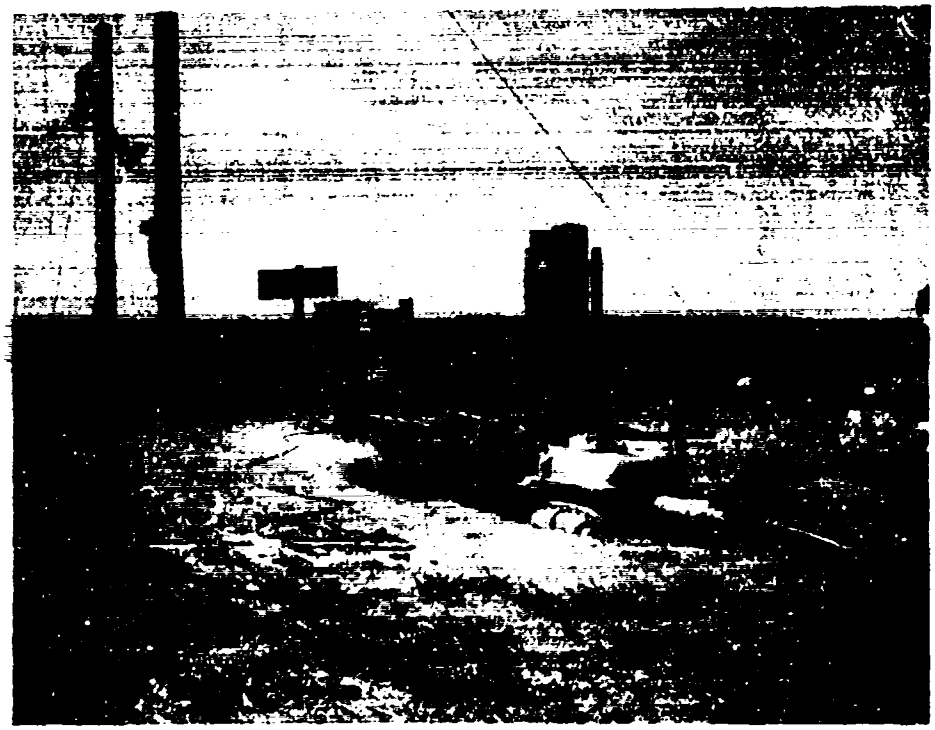

Figure 5.2 Field installation of sulfur-dioxide generating apparatus.

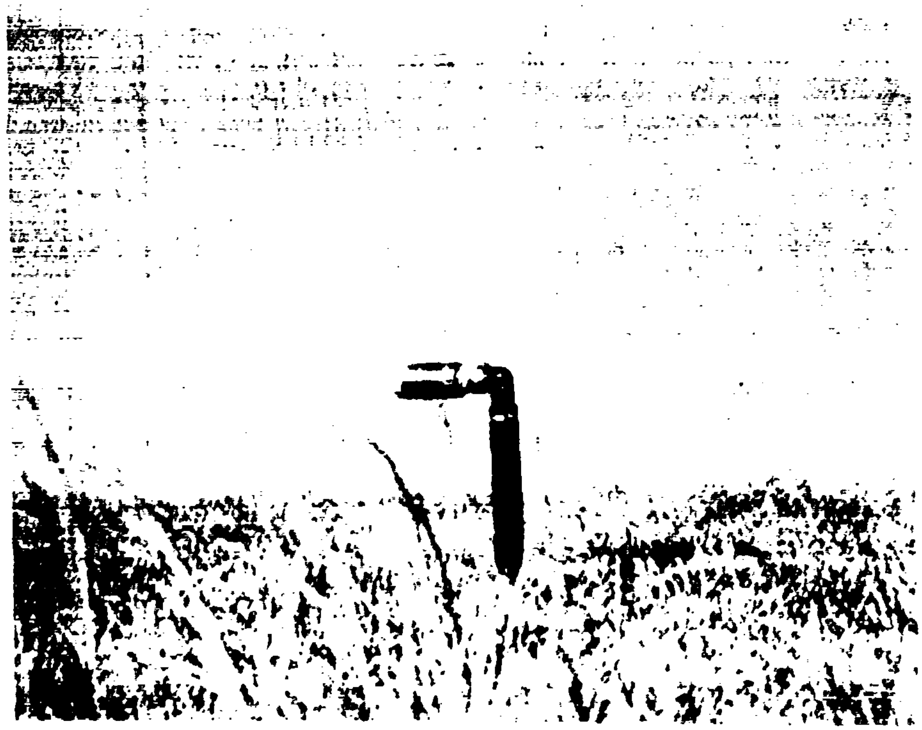

Figure 5.3 Release-point for the tracer.

of the meter to permit accurate reduction of the total amount of gas released to a source strength expressed in g sec^{-1}. As shown in Figure 5.2, the gas meter and the large water tank were set in a shallow trench to minimize the disturbance to the natural air flow immediately upwind from the release point for the sulfur-dioxide gas. The tracer was conducted from the meter outlet through a 50-m length of 2-inch plastic pipe buried just beneath the surface of the ground, and was released horizontally at a height of 46 centimeters. A photograph of the orifice is presented in Figure 5.3; the picture was taken prior to the start of the field experiments before the grass at the field site was mowed. In six experiments (Nos. 63-68), the height of the release point was adjusted to 1.5 m, the height of the samplers in the horizontal sampling network.

The rate of tracer emission was adjustable over a wide range; the maximum source strength of about 100 g sec^{-1} was utilized during the daytime releases. Uniformity of the emission rate was checked during the releases by marking the passage of each 10 cu ft of gas through the meter on an Esterline-Angus recorder; a manually-operated switch activated a sidemarker pen that put a pip at the side of the moving chart roll. During all nighttime experiments and during most daytime experiments, observed variations in the emission rate were less than 5 percent. In a few daytime gas releases, the emission rate during the last minute of source operation was from 5 to 10 percent below the initial rate.

5.3 Description of the Sampling Network

Average gas concentrations were determined at approximately six hundred individual sampling stations located within a semicircle of radius 800 m centered on the release point for the tracer. As shown in Figure 1.1, the base line of the horizontal sampling network was oriented along a true East-West line to take advantage of prevailing southerly winds. Midget impingers (Mine Safety Appliance Company) were mounted at a height of 1.5 m on steel fence posts located along five

semicircular arcs. The posts were spaced at intervals of 2 degrees along the 50-, 100-, 200-, and 400-m arcs; at 800 m, a separation interval of 1 degree was used. The posts for each arc were numbered consecutively, Post Number 1 being located at the intersection of the arc with the western limb of the base line (that is at a true angular bearing of 270 degrees from the release point). Details of the impinger installation are shown in Figures 5.4 and 5.5, and a view of part of the fence post array along the 100-m arc appears in Figure 5.7.

Each impinger contained 10 ml of dilute (slightly acidified) hydrogen peroxide solution. Use of capillaries (see Figure 5.5) reduced the variations in flow rate between impingers to within 1 or 2 percent; otherwise, variations of the order of 10 percent were frequently present. Each section of precision bore capillary tubing (inside diameter - 0.0252 ± 0.0003 in.; length - 1.330 to 1.335 in.) was tested individually in the laboratory with a standard impinger; only those sections that were within 1.5 percent of standard were selected for field use. Air thus drawn into the impingers passed down the central glass tubes and was broken into tiny bubbles as it impinged upon the bottom of the glass flasks. Sulfur dioxide present in the air reacted with the hydrogen peroxide to form sulfuric acid. The collection efficiency of the impingers, as indicated by laboratory tests described below, was greater than 97 percent for all the Prairie Grass experiments.

Aspiration of the impingers was provided by 11 vacuum units (electric motor, pump, tank, vacuum regulator) apportioned as follows along the various arcs: one unit at 50 m; two units at 100 m (one for the vertical network described below), 200 m, and 400 m; and four units at 800 meters. One of the units used in field experiments is shown in Figure 5.6. The 1/3-hp motor, pump, and tank are sold commercially for use with farm milking machines (Sears Roebuck and Company); the diaphragm-type regulator (Fisher Governor Company Type 734A), seen at the extreme left of the photograph, maintained the line vacuum within 1 to 2 percent of the desired value during the 10-minute sampling period.

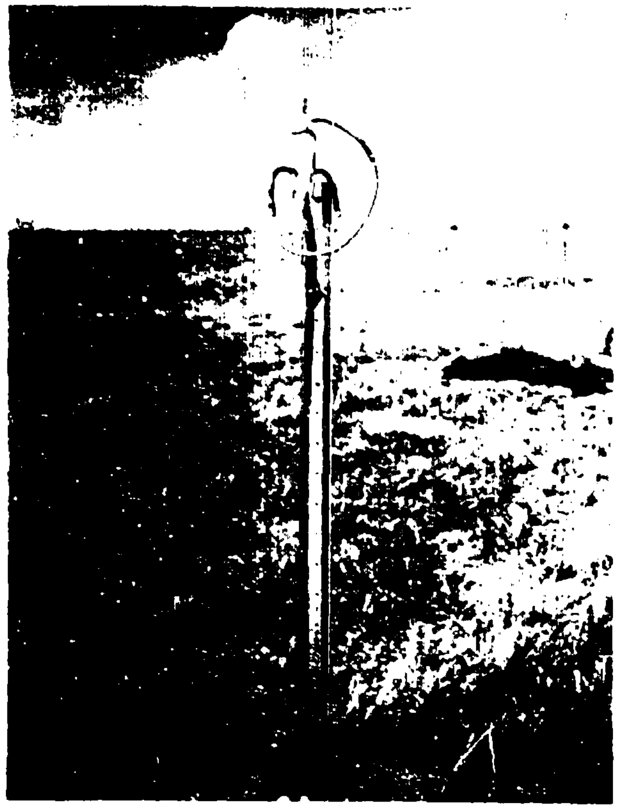

Figure 5.4 *Midget impinger mounted at height of 1.5 m on steel fence post.*

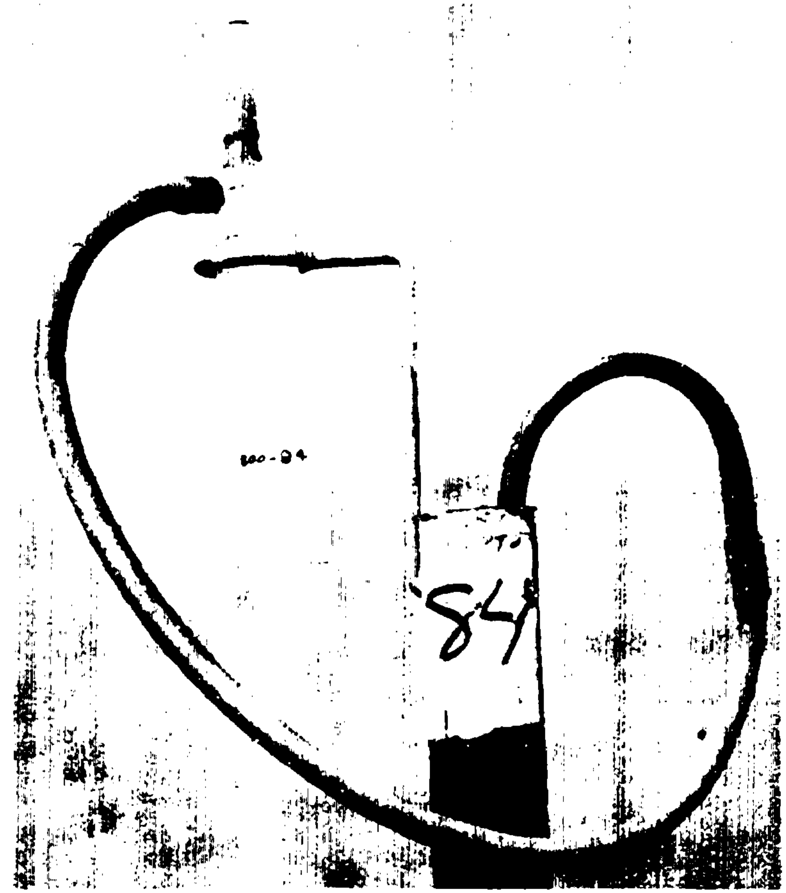

Figure 5.5 Close-up of midget impinger in operation.

A visual check on the line vacuum was provided by a mercury manometer mounted on a steel fence post. Heavy-wall rubber hose was attached to the inlets of the vacuum tanks (see Figure 5.6) and laid on the ground along the arcs of the sampling network. Copper tubing was inserted in the hose at each sampling station and fastened to the steel fence posts (see Figure 5.4). The impingers were set in ring holders attached to the tops of the posts and connected to the vacuum line by short lengths of gum rubber tubing (see Figure 5.5). An aspiration rate of 1.0 liter min^{-1} was used at 50 and 100 m; this required a line vacuum of 51 mm of mercury. A somewhat higher aspiration rate (1.5 liter min^{-1}, requiring a line vacuum of 100 mm of mercury) was used at the other arcs to compensate in part for the expected decrease in concentration with travel distance. The maximum drop in line vacuum along the longest sections of rubber hose was about 4 percent; this is equivalent to a reduction of about 2 percent in the rate of aspiration. Operation of the vacuum-pump motors was controlled from a central switchboard located along the centerline of the sampling network at a travel distance of about 450 m from the release point. Line vacuums were checked and necessary adjustments made just before the start of each diffusion experiment.

Average gas concentrations were also determined along the vertical from midget impingers mounted at nine levels on each of six towers located along the 100-m arc. The lightweight television-type towers (Alprodco, Inc.) were spaced at intervals of 14 degrees and were positioned symmetrically with respect to the center line of the horizontal sampling network. A photograph of the tower array appears in Figure 5.7. The towers were constructed of aluminum alloy with triangular cross sections measuring 8-1/2 inches on a side; each tower rested on a small cement base and was supported at three levels by 3/16-inch stranded-steel guy wires. The technique for installing the impingers on the towers is illustrated in Figure 5.8. Heavy rubber hose similar to that used in the horizontal network was

Figure 5.6 Vacuum unit used to aspirate midget impingers; mercury manometer indicating line vacuum is mounted on steel post.

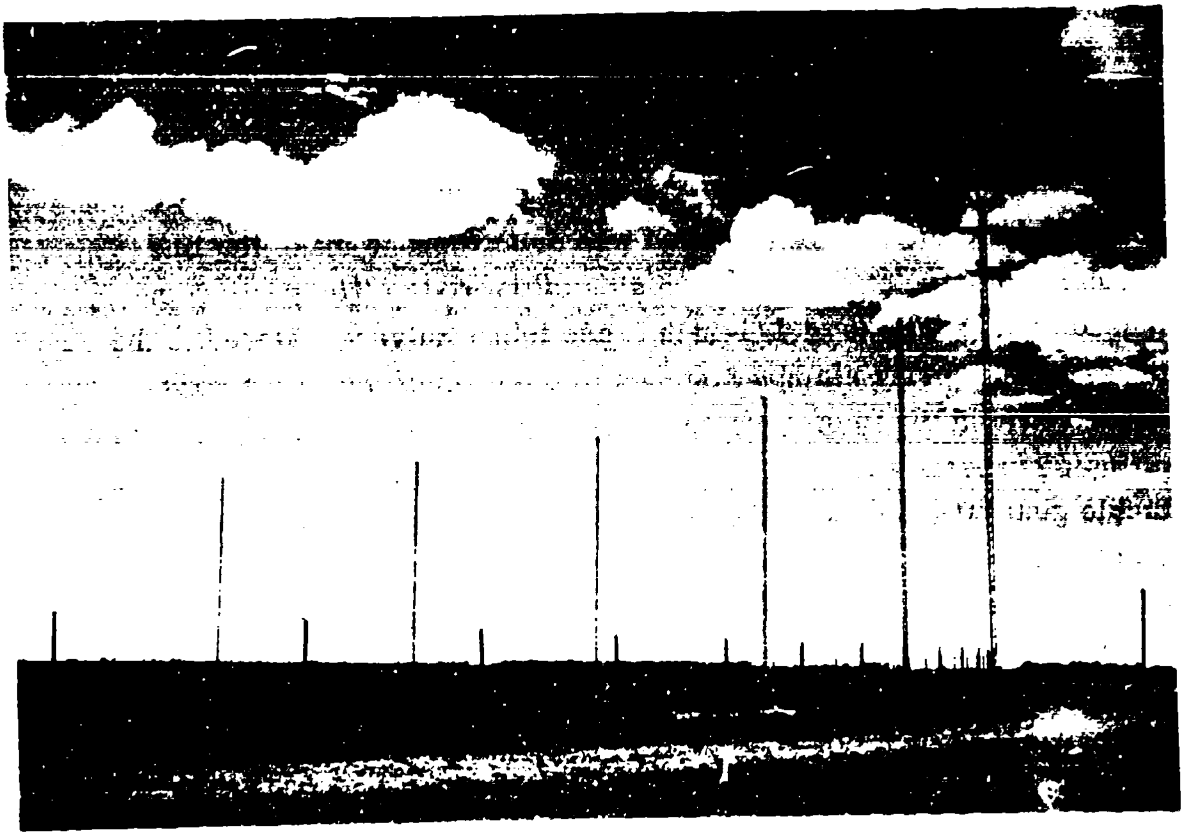

Figure 5.7 Tower array at 100-m arc.

Figure 5.8 Close-up of impinger installation on tower

fitted with short lengths of solid brass rod (5/8 in. in diameter); a portion of the interior of each rod was drilled out to make the line vacuum available at a port on the side of the rods. The ports comprised short sections of 1/4-inch brass tubing silver-soldered to the brass rods. Spring clamps fastened to the ends of the brass rods served to hold the impingers securely in place. Prior to the start of a diffusion experiment, the rubber hose was raised by simple block and tackle gear; the ascent of the hose was guided by sections of aluminum track fastened to the sides of the towers and slotted to permit passage of the brass rods (see Figure 5.8). Impingers were inserted in the spring clamps and gum rubber tubing used to connect the impinger outlets to the line-vacuum ports. At the conclusion of the experiment, the rubber hose was lowered and the impingers removed for transport

to the laboratory and subsequent analysis. The rope used to raise and lower the vertical sampling apparatus appears at the extreme right of Figure 5.8. This simple technique worked very satisfactorily. A single vacuum unit located at the center of the 100-m arc provided aspiration for the impingers on the 6 towers. Concentrations were determined at 9 levels on each tower: 0.5, 1.0, 1.5, 2.5, 4.5, 7.5, 10.5, 13.5, and 17.5 meters.

5.4 Laboratory Procedure

The successful execution of the diffusion experiments depended in large measure upon careful analytic procedure and high standards of cleanliness. Any contamination of the impinger solutions seriously impaired the high degree of resolution otherwise obtainable in the measurements. A special laboratory building was erected at the field site to provide storage space for the impingers and auxiliary apparatus, as well as working space for analysis of the aspirated solutions. The building was of double-wall plywood construction, fully insulated, and painted white on the exterior to minimize the absorption of solar radiation. Incursions of dust were largely eliminated through the use of sealed windows and a single entrance on the north side of the building, sheltered from the prevailing southerly winds. An exterior view of the laboratory building appears in Figure 5.9. Suitable temperatures were maintained within the laboratory building by two air conditioners.

Diffusion experiments were scheduled in pairs, each experiment requiring the use of 599 impingers. The impingers were filled by means of pipettes that automatically metered 10 ml of solution. The filling operation is shown in Figure 5.10; the wire basket appearing in the figure contains approximately 50 impingers. After the impingers were filled with hydrogen-peroxide solution, the baskets were stored on shelves in the laboratory (see Figure 5.11) until the field crew took them to the sampling network. Much of the work of installing the impingers within the network and returning the samplers to the laboratory was performed by 12 high-school age boys from O'Neill, Nebraska.

Figure 5.9 Exterior of laboratory.

Figure 5.10 Filling impingers with solution.

Figure 5.11 Shelves for storage of impinger baskets.

The following precautions were taken to avoid any mixup in the impingers: All baskets were clearly labeled with respect to the appropriate arc and the spaces for individual impingers were numbered according to the posts of the horizontal sampling network; the impingers in each basket were similarly labeled. There were two complete sets of impingers; the baskets of one set were painted blue and those of the second set were painted red. Only one set was ever permitted to leave the laboratory during preparations for a gas release. The impingers for the vertical sampling network were placed in separate baskets and clearly labeled. The field crew left the sampling network area after the impingers had been installed and waited for the conclusion of the experiment. Then, after the tracer had cleared the networks and the meteorological measurements were ended, the field crew collected the impingers and returned the baskets to the laboratory for analysis.

Figure 5.12 Analysis team determining conductance of aspirated solutions

The analysis consisted of measuring the electrical conductance of the aspirated solutions using conductivity cells and Wheatstone bridges. The impinger baskets were placed one at a time in a constant-temperature water bath. When the bath temperature reached the prescribed value, the conductance of the solution in each impinger was measured. An analysis team is shown in Figure 5.12; the man standing has removed the top of the impinger assembly and inserted the dip-type conductivity cell into the solution; the man seated is reading the resistance on a Wheatstone bridge. This equipment was duplicated at

the other end of the laboratory. When all the conductances had been determined and checked for accuracy, the impingers were emptied, rinsed, and refilled with solution in preparation for the next experiment. After the laboratory and field crews had become proficient, it was possible to conduct four diffusion experiments within an 8-hour period.

Reduction of the electrical conductivities to gas concentrations is based on well-known laboratory procedures.* Calibration curves may be obtained directly by determining the conductance of sulfuric acid solutions of known normality. Equivalent conductance for these solutions is tabulated in standard reference books for a wide range of normality and temperature. The relationship between the specific conductance of a solution at a temperature of 27°C and the normality of the solution is shown in Figure 5.13. The scale at the right of the figure expresses normality in terms of milligrams of sulfur dioxide per cubic meter of air for 10 ml of absorbing solution and a sample volume of air of 15 liters. The reference level for zero concentration was obtained from the average conductance of aspirated solutions contained in impingers that were clearly in sectors of the sampling network outside the limits of the gas plume. The uncertainty in the laboratory technique for determining conductance is less than 2 percent within the normal range of concentrations.

5.5 Collection Efficiency of the Midget Impingers

The apparatus shown in Figure 5.14 was used to determine collection efficiencies of the midget impingers in the laboratory. Sulfur-dioxide gas and air were metered into the vertical pipe at the left and entered the large mixing tank; the mixture was removed from the tank and drawn through the pipe and rubber hose shown at the right of the photograph by an exhauster located outside the laboratory building. Both the amount of air and sulfur dioxide were adjustable over a

*For a previous application of this method see: Dean, R. S., and others, 1944: Report submitted to the Trail Arbitral Tribunal. Bull. U. S. Bureau of Mines, No. 453.

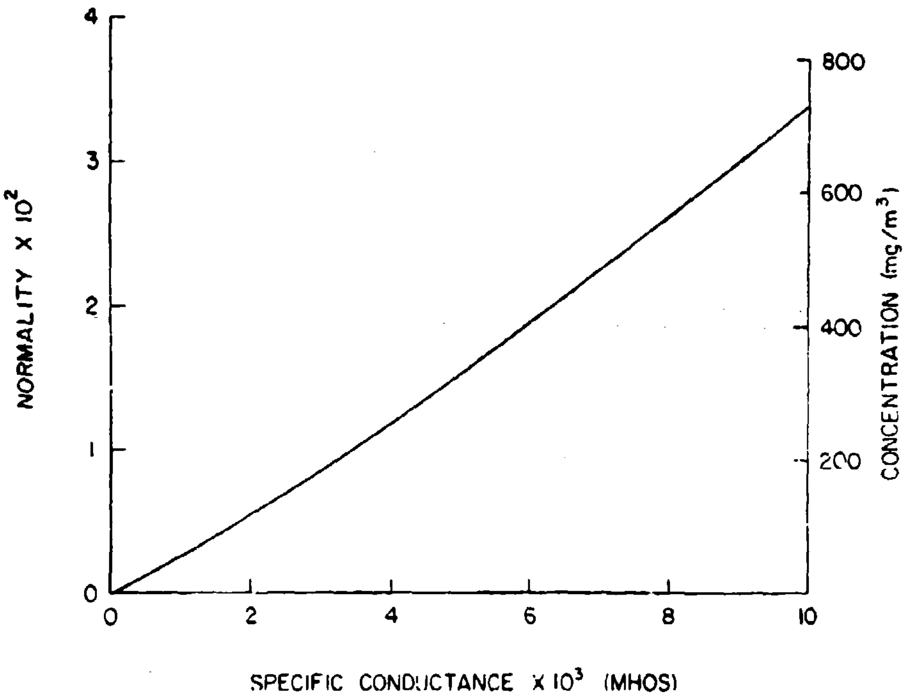

Figure 5.13 Calibration curve showing specific conductance as function of normality and concentration.

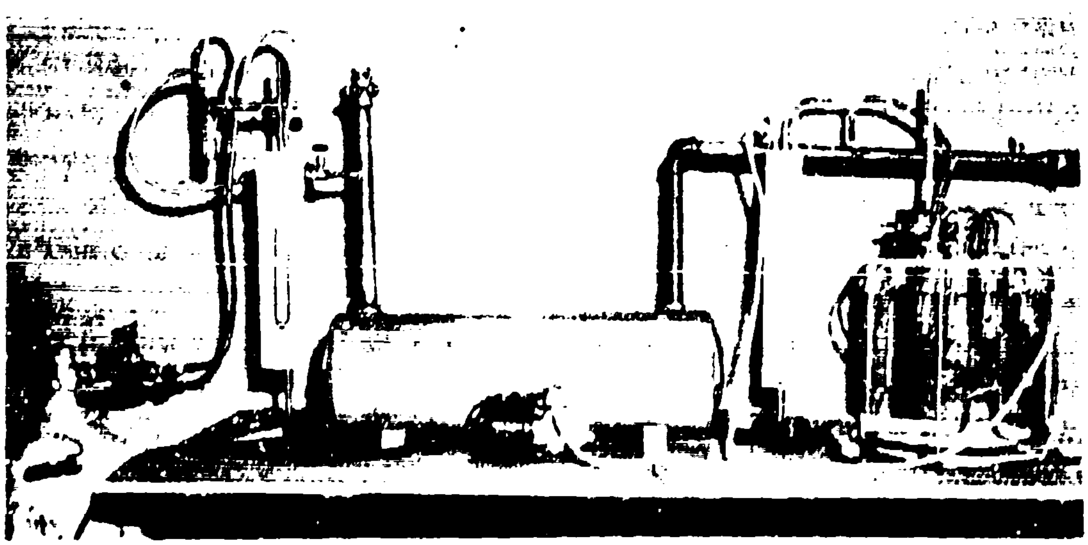

Figure 5.14 Apparatus for determining collection efficiency of midget impingers.

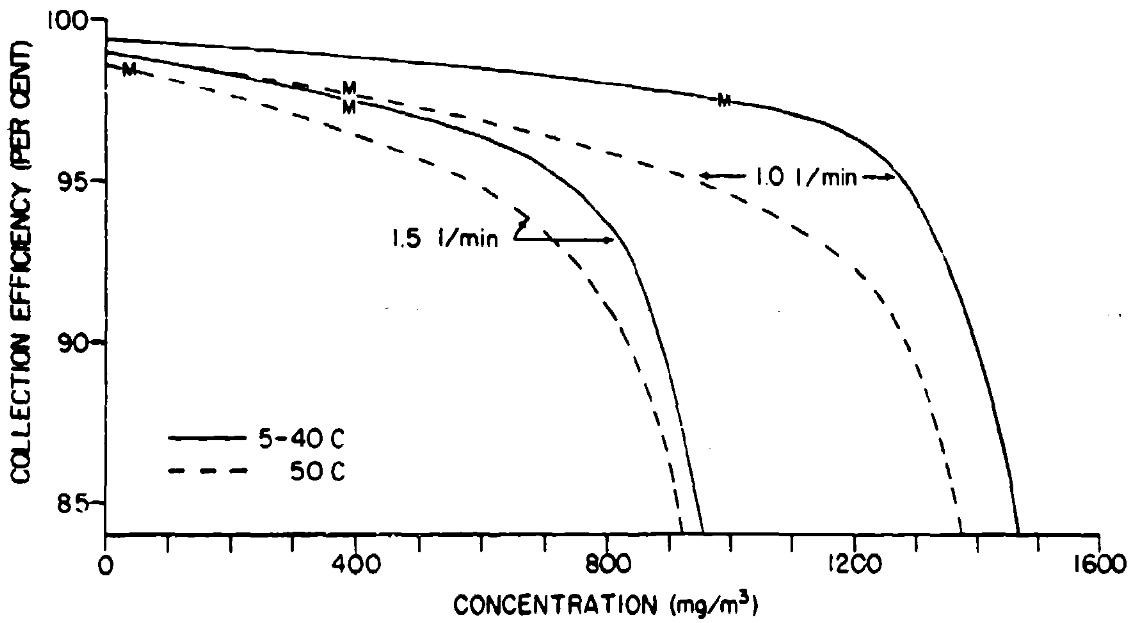

Figure 5.15 Collection efficiencies of midget impingers used in Prairie Grass diffusion experiments

wide range. The mixture was sampled through ports in the exit pipe in the following manner: The small vacuum pump in the foreground drew the mixture at a predetermined rate (1.0 or 1.5 liter min^{-1}) through four impingers connected in series by non-absorbing plastic tubing. Samples were obtained over 1-minute periods at levels of concentration approximately 10 times larger than those encountered in the field experiments. This procedure was intended to compensate for the meandering of the gas plume during field experiments produced by the larger-scale fluctuations in azimuth wind direction; in effect, the gas plume is present at an individual sampling station for only a fraction of the 10-minute sampling time. The significance of solution temperature on the measurement technique was investigated by immersing the four impingers in a water bath; the bath temperature was then varied over the range from 5° to 50°C. Conductivity measurements of the solutions in the four impingers provided concentration data used in calculating the collection efficiencies presented in Figure 5.15.

The results are directly applicable to the Project Prairie Grass diffusion experiments; the concentrations plotted in Figure 5.15 are adjusted for the 10-minute sampling periods of the field experiments (that is they are 1/10 the values determined from the laboratory tests described above). Maximum 10-minute concentrations measured during the Prairie Grass experiments are indicated in the figure by the symbol M. The data indicate that the collection efficiencies during Prairie Grass were greater than 97 percent in all cases. The sharp decrease in collection efficiency with increasing concentration exhibited by the curves is associated with the removal of hydrogen peroxide from the solution; the concentration at which this occurs can be altered by changing the amount of hydrogen peroxide in the solution. The solution used during Prairie Grass, and in the laboratory experiments for determining the collection efficiency, was prepared by adding 50 ml of 30 percent hydrogen peroxide and 10 ml of 1/10 normal sulfuric acid to 18 liters of distilled water. The solution's temperature appears to have no significant effect on collection efficiency for temperatures within the 5° to 40°C range; for temperatures of 50°C, the collection efficiency is somewhat reduced as indicated by the dashed lines in Figure 5.15.

5.6 Discussion of the Reliability of the Concentration Measurements

As pointed out, above, determining time-mean gas concentrations involves a relatively large number of individual measurement techniques and pieces of equipment. With few exceptions, the uncertainties associated with these individual procedures are all within the range of from 1 to 2 percent. It is also evident that many, if not most, of these uncertainties are probably random and tend largely to compensate one another. The accuracy of the determination of average source strength for individual gas releases depends principally upon the reliability of the gas meter and on the representativeness of the temperature measurements obtained, during the releases, at the inlet and outlet of the meter.

In calculating the weight of gas released, arithmetic means of the

inlet and outlet measurements were used. For the nighttime gas releases, there is no significant difference between the two sets of data. During the daytime releases, the inlet temperature is frequently 10° to 12°C lower than the outlet temperature. In these cases, use of the average temperature might lead to uncertainties of the order of 1 to 2 percent in the calculated source strength. Changes in ambient air temperature have only a slight effect on the mechanical parts of the gas meter; the manufacturer states that the temperature coefficient for the displacement mechanism is approximately 0.05 percent per degree Fahrenheit. Over the range of temperatures encountered during the experiments, this would result in an uncertainty of about 1 percent. Duration of the gas release was controlled within limits of 1 to 2 percent. Residual sulfur dioxide remaining in the plastic pipe used to conduct the tracer from the meter to the release-point constitutes approximately 1 percent of the total volume released during nighttime experiments and about 0.5 percent of the total volume released during the daytime experiments. This appears to be a negligible source of error. The adjustment in the gas meter at the factory, resulting in dial readings approximately 1 percent too low, is offset very nicely by the collection efficiency of the impingers which averages approximately 99 percent.

Possible sources of error in the collection of gas samples exist principally in variations in the rate of aspiration and loss of solution due to evaporation. As mentioned above, laboratory tests of individual impingers and capillaries limited the variation in flow rate under standard vacuum to a range of 1 to 2 percent. In field use, line vacuum depended upon the initial adjustment based on mercury manometer readings, the sensitivity of the vacuum regulators, and the line drop along the arcs. Each of these factors contains an uncertainty of about 1 to 2 percent with respect to the aspiration rate. All concentrations were calculated on the assumption that the volume of absorbing solution in the impingers remained unchanged during the experiments. There is

actually a small reduction in volume due to loss of water vapor during aspiration. Similar loss of sulfuric acid is considered insignificant in view of its very low vapor pressure.

The water vapor loss may be estimated in two ways. The amount of water vapor required to saturate the entrained air may be calculated from a knowledge of the aspiration rate, air temperature, relative humidity, and the duration of the sampling period. The latter comprises both the actual operation time of the sampling networks during each gas release and the time required to check the line vacuum prior to the start of each release. No records were kept of the total aeration time which varied from experiment to experiment and from one arc to another. However, a period of about 18 to 30 minutes was usually required. Calculations based on the maximum aeration time of 30 minutes and an aspiration rate of 1.0 liter min^{-1} indicate, for the nighttime experiments, a median error of 2 percent and an extreme range from 0.6 to 5.0 percent. Similar calculations for the daytime experiments indicate a median error of 5.5 percent with an extreme range from 2 to 10 percent. Loss of solution by evaporation may also be estimated from differences in the conductance of aspirated solutions in impingers located outside the limits of the time-mean gas plume and the conductance of unaspirated solutions in spare impingers. These data are available for practically all the experiments and permit calculation of correction factors at each travel distance.

The principal source of uncertainty in this method is the presence of background contaminants that may affect the conductance of the aspirated solutions; it appears that this factor is generally quite small and probably does not account for more than a 1 or 2 percent variation in conductance. Approximate correction factors based on conductances are presented in Table 5.4; the results indicate a median error of 3 to 5 percent for the nighttime experiments and of 6 to 9 percent for the daytime experiments. The lower estimates refer to the concentration measurements at 50 and 100 m, and the higher estimates refer to the

remaining travel distances and reflect principally the difference in rates of aspiration discussed above.

The laboratory analysis of the aspirated solutions was performed in the following manner: Baskets containing about fifty impingers were placed one at a time in the water baths. When the proper bath temperature had been attained, a dip-type conductivity cell was inserted in one impinger and the conductance determined. Then the cell was removed, excess solution was shaken off, and the cell was inserted in the next impinger, and the process repeated. This procedure entailed a slight carry-over of solution from one impinger to the next. The usual practice involved determination of conductances from one edge of the plume to a point slightly beyond the peak concentration; the analysis then continued from the other edge of the plume towards the peak. The reduction in concentration produced by the carry-over and subsequent dilution of solutions is estimated to be from 0 to 1 percent. The Wheatstone bridge had an uncertainty of about 1 percent. Errors due to the original adjustment of the conductivity cells and to changes in cell constants are believed to be about 1 or 2 percent. A change of about 7 percent was noted in the constant of one conductivity cell during the period of the experiments; conductances determined with this cell were subsequently adjusted. Electrolytic solutions have temperature coefficients of resistance of about 2 percent per degree Centigrade; since the water bath temperature was maintained constant within 0.1°C, variations in solution temperature may be neglected as a possible source of error.

Reduction of the electrical conductivities of the aspirated solutions to concentrations was based on results of laboratory determinations of the specific conductance of sulfuric acid solutions of known normality. The values thus obtained are in substantial agreement with those derived from published data. The calibration curves used in reducing the measured conductances are believed accurate to about $\pm$ 3 percent. The reference level for zero concentration was obtained from the arithmetic mean of the conductances of aspirated solutions contained in

impingers located outside the limits of the time-mean gas plume. In general, this concentration level is almost entirely due to the small amount of sulfuric acid added in preparing the dilute hydrogen-peroxide solution. It does not, therefore, indicate the presence of any significant amount of sulfur-dioxide in the atmosphere at the Prairie Grass field site. As the limit of resolution of the sampling technique is approached, the uncertainty of determination increases rapidly; for concentrations less than 0.10 mg m^{-3}, this uncertainty is approximately 25 percent.

Approximate checks on the reliability of the concentration measurements were obtained by comparing the calculated source strengths with the mass transport of sulfur-dioxide gas through a vertical cross section at a travel distance of 100 meters. This is the only distance at which vertical concentration data are available. The results indicate that the estimates for the mass transport are about 10 percent higher, on the average, than the calculated source strengths for the nighttime experiments; a similar average discrepancy of about 15 percent is noted in the case of the daytime experiments. Roughly one-third of these differences can be explained by the loss of solution due to evaporation; the remainder may be due in part to undetected systematic errors in the sampling technique, to overestimates of the mean wind speed, and to errors inherent in the method of computing the mass transport. At any rate, there is no evidence of any significant loss of sulfur dioxide due to absorption by vegetation or any other factor. It appears likely that the absolute magnitudes of the Prairie Grass diffusion measurements are accurate to within 10 percent and that the relative concentrations are accurate to within 5 percent.

Summaries of the results of the Prairie Grass diffusion measurements are presented in Tables 5.1 to 5.3. Table 5.1 summarizes the source strengths for the individual experiments calculated on the basis of the total volumes of gas released and the temperature and pressure of the gas as it passed through the meter. Ten-minute average gas concentrations measured at a height of 1.5 m at five travel

distances are summarized in Table 5.2. The average concentrations determined from the vertical sampling array at 100 m are presented in Table 5.3. Slow-response meteorological data, useful in converting the concentrations to standard values, are found in Tables 5.4 and 5.5.

Table 5.1. Source strengths Q expressed in g sec^{-1} for individual Prairie Grass diffusion experiments

Run No.	Q (g sec^{-1})	Run No.	Q (g sec^{-1})	Run No.	Q (g sec^{-1})
1	81.5	24	41.2	46	99.7
2	83.9	25	101.4	47	103.1
3	56.3	26	97.6	48S	104.0
4	50.5	27	98.8	48	104.1
5	77.8	28	41.7	49	102.0
6	89.5	29	41.5	50	102.8
7	89.9	30	98.4	51	102.4
8	91.1	31	96.0	52	104.0
9	92.0	32	41.4	53	45.2
10	92.1	33	94.7	54	43.4
11	95.9	34	97.4	55	45.3
12	99.1	35S	41.8	56	45.9
13	61.1	35	38.8	57	101.5
14	49.1	36	40.0	58	40.5
15	95.5	37	40.3	59	40.2
16	93.0	38	45.4	60	38.5
17	56.5	39	40.7	61	102.1
18	57.6	40	40.5	62	102.1
19	101.8	41	39.9	65	44.1
20	101.2	42	56.4	66	43.1
21	50.9	43	98.9	67	45.0
22	48.4	44	100.7	68	42.8
23	40.9	45	100.8		

Table 5.2

Ten-minute average gas concentrations measured during Project Prairie Grass at a height of 1.5 m at five travel distances: 50, 100, 200, 400, and 800 m. Entries are in units of mg m^{-3}. Individual sampling stations at each travel distance are identified in terms of post numbers which are consecutive; Post No. 1 is located due west of the release-point (that is, at a true angular bearing of 270 degrees from the source). A 2-degree angular separation between adjacent stations was used at the four shorter travel distances and a 1-degree angular separation was used at 800 m.

Remarks

No data are presented for Runs No. 63 and 64 due to the presence of extremely light and variable winds. Data for all other experiments have been included. The measurements obtained under stable night-time conditions should be interpreted with care. In particular, when the wind speed at a height of 2 m is < 2 m sec^{-1}, significant vertical stratification may occur in the plume; in some cases, the plume axis is found below the height of the sampling stations at the shorter travel distances. If this phenomenon is not taken into account, the measurements indicate an increase in axial concentration with increasing travel distance. The vertical concentration measurements presented in Table 5.3 are useful in resolving these problems. With regard to the tabular entries, the letter "M" indicates missing data and the blank spaces denote no measurable concentration.

Run No. 4 - Gas released for 9.5 minutes only. Concentrations have been adjusted to a 10-minute release period.

Run No. 25 - Several gnats were caught in the capillary tubes used as entrances to the samplers. All concentrations known to have been influenced have been indicated as missing.

Runs No. 30 and 31 - Background resistances unusually low and variable. Data believed not significantly affected, except for concentrations below 5 mg m^{-3}.

Run No. 45 - Concentration at Post 38 of the 50-m arc is an adjusted value.

Run No. 47 - Rate of gas release during the first 90 seconds of the run varied by perhaps $\pm$ 50 percent of the average rate for the 10-minute period.

Run No. 50 - Vacuum line to Sampler 62 of the 200-m arc became disconnected during the run. All values measured at this arc are too low.

Run No. 51 - Vacuum line to Sampler 56 of the 400-m arc is believed to have been disconnected throughout the run. All values for this arc have been adjusted to make allowance for the reduced vacuum.

Run No. 57 - Vacuum line to Sampler 47 of the 100-m arc is believed to have become disconnected. All values measured at this arc are probably too low.

Table 5.2 (Continued)

DATE 3 July 1956
TIME 1100-1110 CST

CONCENTRATION (mg m^{-3})

RUN NO. 1

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					0.145
	2						24	47	123	14.8	1.18	0.310	0.215
2	3							48					0.205
	4						25	49	109	14.7	1.23	0.295	0.215
3	5							50					0.260
	6						26	51	89.4	14.5	0.970	0.090	0.160
4	7	0.110	0.160					52					0.105
	8						27	53	92.9	14.2	0.995	0.090	0.100
5	9	1.49	0.700					54					0.090
	10						28	55	115	13.5	1.70	0.420	0.100
6	11	6.13	0.870					56					0.165
	12						29	57	122	17.0	1.99	0.520	0.190
7	13	25.3	0.765					58					0.185
	14						30	59	118	13.8	2.20	0.510	0.170
8	15	37.0	2.20					60					0.145
	16						31	61	106	14.9	2.51	0.495	0.085
9	17	50.9	2.17	0.155				62					0.100
	18						32	63	114	19.1	2.05	0.725	0.070
10	19	63.8	6.22	0.755	0.030			64					0.060
	20						33	65	108	18.4	1.57	1.12	0.075
11	21	66.9	11.6	0.675	0.015			66					0.080
	22						34	67	88.1	17.1	2.35	0.895	0.045
12	23	77.7	9.64	0.525	0.045			68					0.050
	24						35	69	70.5	17.3	2.79	1.02	0.020
13	25	89.1	9.07	0.455	0.070			70					0.030
	26					0.055	36	71	80.6	18.2	3.56	0.410	0.045
14	27	139	14.3	0.920	0.255	0.020		72					
	28					0.015	37	73	99.5	20.2	3.71	0.665	
15	29	119	11.6	1.28	0.140	0.065		74					
	30					0.010	38	75	112	25.4	3.97	0.610	
16	31	134	18.7	.995	0.270	0.000		76					
	32					0.045	39	77	123	19.8	4.08	0.650	
17	33	103	19.5	1.87	0.295	0.020		78					
	34					0.025	40	79	140	24.0	4.07	0.460	
18	35	84.0	22.0	1.77	0.160	0.025		80					
	36					0.025	41	81	120	21.7	3.34	0.340	
19	37	107	25.6	3.82	0.090	0.055		82					
	38					0.070	42	83	124	24.4	3.62	0.255	
20	39	106	23.8	4.38	0.130	0.150		84					
	40					0.155	43	85	121	19.3	2.12	0.060	
21	41	103	22.5	4.25	0.225	0.170		86					
	42					0.195	44	87	125	17.5	1.73		
22	43	95.7	11.2	2.06	0.385	0.155		88					
	44					0.150	45	89	95.0	11.6	1.56		
23	45	88.1	10.9	1.94	0.410	0.160		90					

Table 5.2 (Continued)

DATE 3 July 1956
TIME 1100-1110 CST

CONCENTRATION (mg m^{-3})

RUN NO. 1

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	600m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	60.6	8.01	0.945				136					
	92						69	137					
47	93	60.6	7.39	0.625				138					
	94						70	139					
48	95	41.1	8.42	0.215				140					
	96						71	141					
49	97	34.7	5.21	0.070				142					
	98						72	143					
50	99	20.0	1.46					144					
	100						73	145					
51	101	12.8	0.230					146					
	102						74	147					
52	103	7.32	0.345					148					
	104						75	149					
53	105	4.47	0.100					150					
	106						76	151					
54	107	3.11						152					
	108						77	153					
55	109	0.185						154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 3 July 1956
TIME 1500-1510 CST

CONCENTRATION (mg m^{-3})

RUN NO. 2

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1	37.4	0.030					46					0.210
	2						24	47	146	23.9	3.80	0.355	0.165
2	3	38.5						48					0.200
	4					0.080	25	49	124	25.5	4.61	0.350	0.160
3	5	23.8	2.10			0.220		50					0.165
	6					0.125	26	51	124	25.4	4.71	0.400	0.100
4	7	30.4	3.20			0.065		52					0.105
	8					0.050	27	53	135	29.7	4.77	0.450	0.055
5	9	[illegible]	2.00					54					0.120
	10					0.055	28	55	148	31.2	3.43	1.13	0.120
6	11	58.4	1.77			0.075		56					0.130
	12						29	57	163	36.9	3.90	1.14	0.115
7	13	73.3	1.88	0.220		0.070		58					0.060
	14					0.090	30	59	144	45.9	4.56	1.06	0.085
8	15	67.6	2.87	1.04	0.085	0.155		60					
	16					0.050	31	61	147	36.3	9.87	0.710	
9	17	56.4	8.93	1.24	0.205	0.115		62					
	18					0.075	32	63	174	42.3	6.29	0.400	
10	19	83.9	13.8	1.63	0.160	0.065		64					
	20						33	65	153	47.9	4.28	0.670	
11	21	81.5	17.1	2.18	0.320			66					
	22					0.130	34	67	163	44.7	2.85	0.050	
12	23	66.8	12.6	2.32	0.285	0.070		68					
	24					0.025	35	69	135	44.3	2.52	0.040	
13	25	66.9	13.5	4.21	0.125	0.040		70					
	26					0.030	36	71	128	14.9	1.42	0.095	
14	27	95.0	10.6	3.28	0.100	0.090		72					
	28					0.110	37	73	100	7.38	0.400		
15	29	118	11.3	1.67	0.105	0.160		74					
	30					0.130	38	75	74.0	0.265	0.050		
16	31	132	12.6	1.12	0.075	0.135		76					
	32					0.065	39	77	34.4	0.450	0.085		
17	33	129	21.8	2.19	0.065	0.025		78					
	34					0.050	40	79	6.61	0.160			
18	35	141	28.5	3.73	0.140			80					
	36					0.315	41	81	2.59	0.075			
19	37	190	38.3	3.70	0.210	0.130		82					
	38					0.140	42	83	0.805	0.050			
20	39	175	35.6	4.05	0.250	0.005		84					
	40					0.120	43	85					
21	41	154	35.9	4.17	0.195	0.195		86					
	42					0.275	44	87					
22	43	192	26.9	4.33	0.270	0.200		88					
	44					0.295	45	89					
23	45	175	27.3	3.67	0.430	0.225		90					

Table 5.2 (Continued)

DATE 5 July 1956
TIME 2200-2210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 3

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					0.060
11	21							66					0.260
	22						34	67					0.275
12	23							68					0.245
	24						35	69					0.235
13	25							70					0.215
	26						36	71					0.205
14	27							72					0.250
	28						37	73					0.200
15	29							74					0.195
	30						38	75	0.175				0.180
16	31							76					0.205
	32						39	77	0.435	0.035	0.025		0.215
17	33							78					0.200
	34						40	79	0.640	0.030	0.025		0.215
18	35							80					0.215
	36						41	81	1.43	0.035	0.025	0.030	0.210
19	37							82					0.235
	38						42	83	2.16	0.035	0.025	0.030	0.220
20	39							84					0.195
	40						43	85	3.68	0.085	0.015	0.035	0.195
21	41							86					0.205
	42						44	87	5.84	0.375	0.005	0.025	0.190
22	43							88					0.200
	44						45	89	7.61	1.28	0.005	0.025	0.200
23	45							90					0.215

Table 5.2 (Continued)

DATE 5 July 1956
TIME 2200-2210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 3

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	9.69	2.79	0.015		0.235		136					0.630
	92					0.220	69	137	30.9	43.5	19.8	5.84	0.560
47	93	11.6	4.25	0.110	0.010	0.205		138					0.580
	94					0.245	70	139	29.1	44.3	25.0	6.78	0.470
48	95	12.1	6.48	0.320	0.020	0.265		140					0.255
	96					0.260	71	141	33.2	47.6	28.6	8.77	0.140
49	97	15.2	5.85	1.03	0.010	0.235		142					0.025
	98					0.245	72	143	32.5	50.9	30.0	12.1	
50	99	19.5	11.7	2.25	0.020	0.200		144					
	100					0.220	73	145	27.8	57.3	37.6	14.1	
51	101	22.1	13.5	3.87	0.020	0.185		146					
	102					0.155	74	147	21.9	45.6	41.0	16.3	
52	103	22.1	14.6	4.97	0.020	0.125		148					
	104					0.120	75	149	24.6	56.6	53.1	16.6	
53	105	22.7	16.7	6.55	0.035	0.125		150					
	106					0.140	76	151	19.1	50.0	61.5	14.7	
54	107	25.1	17.6	8.49	0.055	0.120		152					
	108					0.125	77	153	18.8	54.6	67.2	15.4	
55	109	24.6	19.2	10.6	0.120	0.105		154					
	110					0.075	78	155	19.1	58.7	65.7	16.7	
56	111	27.0	21.5	11.0	0.170	0.115		156					
	112					0.075	79	157	14.3	58.7	71.7	15.1	
57	113	27.9	23.9	10.4	0.275	0.110		158					
	114					0.115	80	159	17.1	42.5	56.4	14.0	
58	115	28.4	23.7	11.6	0.385	0.105		160					
	116					0.100	81	161	17.4	43.1	51.2	14.4	
59	117	34.1	24.8	11.1	0.690	0.085		162					
	118					0.105	82	163	15.3	54.5	63.4	16.9	
60	119	41.6	23.4	12.3	0.860	0.085		164					
	120					0.040	83	165	9.98	70.8	63.4	17.6	
61	121	38.4	24.3	12.2	1.15	0.065		166					
	122					0.090	84	167	8.34	99.0	60.9	18.4	
62	123	42.5	23.9	13.6	1.57	0.105		168					
	124					0.145	85	169	14.4	103	55.1	0.250	
63	125	41.1	24.6	13.9	1.24	0.155		170					
	126					0.200	86	171	24.2	140	65.5	10.1	
64	127	44.6	26.3	14.3	2.62	0.165		172					
	128					0.290	87	173	32.6	207	68.7	0.830	
65	129	39.3	28.8	16.4	2.93	0.375		174					
	130					0.330	88	175	32.4	246	80.0	0.010	
66	131	33.9	34.5	15.8	3.77	0.445		176					
	132					0.485	89	177	28.1	226	76.9	0.010	
67	133	33.2	36.3	16.9	4.60	0.545		178					
	134					0.645	90	179	29.7	201	58.7	0.010	
68	135	29.7	39.8	19.4	4.99	0.625		180					
							91	181	13.7	181	16.1	0.005	

Table 5.2 (Continued)

DATE 6 July 1956
TIME 0100-0110 CST

CONCENTRATION (mg m^{-3})

RUN NO. 4

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1	1.37	0.535	0.345	0.030	0.005		46					0.025
	2						24	47	1.93	1.27	1.27	3.57	0.020
2	3	1.53	0.470	0.335	0.075			48					0.035
	4						25	49	2.23	1.48	1.36	4.25	0.025
3	5	1.42	0.500	0.315	0.130	0.015		50					0.020
	6					0.020	26	51	2.48	1.63	1.45	4.56	0.010
4	7	1.23	0.525	0.310	0.190	0.005		52					0.025
	8					0.020	27	53	2.78	1.94	1.55	4.56	0.030
5	9	1.31	0.530	0.350	0.235	0.015		54					0.045
	10					0.020	28	55	3.09	1.83	1.65	5.09	0.050
6	11	1.42	0.575	0.350	0.375	0.005		56					0.050
	12						29	57	3.71	2.04	1.80	5.24	0.035
7	13	1.51	0.545	0.420	0.450	0.010		58					0.030
	14						30	59	4.53	2.42	2.03	5.41	0.030
8	15	1.66	0.580	0.440	0.585			60					0.020
	16						31	61	5.13	2.49	2.13	5.83	0.035
9	17	1.59	0.625	0.490	0.665			62					0.040
	18						32	63	5.78	3.03	2.24	6.08	0.045
10	19	1.43	0.645	0.510	0.795			64					0.060
	20						33	65	6.88	3.17	2.32	6.21	0.020
11	21	1.66	0.705	0.550	0.960	0.005		66					0.050
	22					0.020	34	67	7.89	3.62	2.49	6.54	0.040
12	23	1.54	0.785	0.615	1.06			68					0.050
	24						35	69	9.09	3.63	2.57	6.48	0.035
13	25	1.64	0.815	0.655	1.28	0.035		70					0.050
	26					0.010	36	71	10.3	4.17	2.55	6.87	0.060
14	27	1.47	0.860	0.700	1.33	0.065		72					0.065
	28					0.090	37	73	12.6	5.26	2.57	7.36	0.075
15	29	1.83	0.910	0.700	1.53	0.010		74					0.075
	30					0.030	38	75	14.1	5.75	2.55	7.38	0.090
16	31	1.89	0.910	0.750	1.75	0.110		76					0.085
	32					0.010	39	77	14.6	6.38	2.49	8.01	0.055
17	33	1.69	1.26	0.815	1.98	0.140		78					0.080
	34					0.095	40	79	12.9	6.41	2.58	8.94	0.060
18	35	1.78	1.19	0.855	2.18	0.010		80					0.060
	36						41	81	12.2	6.09	2.69	9.43	0.080
19	37	1.77	1.19	0.950	2.23			82					0.040
	38						42	83	10.8	5.29	2.91	9.96	0.025
20	39	1.82	1.15	1.04	2.33	0.005		84					0.055
	40						43	85	9.54	5.01	2.96	11.2	0.095
21	41	1.93	1.27	1.12	2.60	0.010		86					0.055
	42						44	87	9.09	4.42	3.17	12.7	0.050
22	43	1.93	1.38	1.11	2.83	0.005		88					0.105
	44						45	89	9.09	3.38	3.15	15.1	0.090
23	45	2.10	1.32	1.26	3.07	0.060		90					0.100

Table 5.2 (Continued)

DATE 6 July 1956
TIME 0100-0110 CST

CONCENTRATION (mg m^{-3})

RUN NO. 4

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	8.81	3.81	3.39	17.3	0.120		136					10.7
	92					0.115	69	137	84.8	194	115	47.8	8.37
47	93	10.5	3.66	3.47	20.5	0.140		138					5.11
	94					0.135	70	139	78.0	218	152	66.7	1.53
48	95	14.3	3.71	3.61	24.1	0.135		140					0.220
	96					0.080	71	141	69.6	174	151	8.48	
49	97	27.0	4.80	3.95	24.5	0.095		142					
	98					0.065	72	143	62.8	140	65.5	0.135	
50	99	54.5	7.93	4.84	23.3	0.110		144					
	100					0.110	73	145	58.1	87.8	2.02		
51	101	98.8	10.7	7.34	23.3	0.140		146					
	102					0.120	74	147	53.1	42.6	0.050		
52	103	135	14.8	13.7	24.2	0.095		148					
	104					0.085	75	149	32.2	4.58			
53	105	153	36.5	25.8	27.4	0.105		150					
	106					0.135	76	151	9.90	0.170			
54	107	169	91.1	35.4	30.9	0.125		152					
	108					0.160	77	153	0.535	0.045			
55	109	186	161	70.6	29.8	0.245		154					
	110					0.285	78	155	0.275				
56	111	177	199	104	26.6	0.285		156					
	112					0.300	79	157	0.065				
57	113	196	221	133	26.7	0.355		158					
	114					0.465	80	159	0.040				
58	115	208	216	105	24.8	0.460		160					
	116					0.585	81	161					
59	117	238	213	80.2	22.3	0.670		162					
	118					0.715	82	163					
60	119	267	202	66.7	17.7	0.935		164					
	120					1.22	83	165					
61	121	261	212	55.1	15.6	1.66		166					
	122					2.22	84	167					
62	123	268	210	48.3	14.8	2.91		168					
	124					3.61	85	169					
63	125	235	186	50.2	14.9	4.33		170					
	126					4.85	86	171					
64	127	221	177	49.2	13.8	5.61		172					
	128					6.37	87	173					
65	129	196	182	59.6	15.9	6.84		174					
	130					8.18	88	175					
66	131	159	159	68.2	17.1	9.01		176					
	132					10.1	89	177					
67	133	135	161	73.6	20.1	10.6		178					
	134					11.2	90	179					
68	135	107	163	77.3	27.7	11.4		180					
							91	181					

DATE 6 July 1956
TIME 1400-1410 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 5

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49	0.315				
3	5							50					
	6						26	51	2.69				
4	7							52					
	8						27	53	8.84				
5	9							54					
	10						28	55	13.1	0.360			
6	11							56					
	12						29	57	10.9	2.82			
7	13							58					
	14						30	59	10.8	4.71			
8	15							60					
	16						31	61	13.7	3.17	0.085		
9	17							62					
	18						32	63	17.9	2.28	0.675		
10	19							64					
	20						33	65	18.6	2.87	1.42	0.040	
11	21							66					
	22						34	67	17.3	5.00	1.17	0.080	
12	23							68					
	24						35	69	15.3	5.97	1.28	0.395	
13	25							70					
	26						36	71	18.3	6.45	1.66	0.520	
14	27							72					0.035
	28						37	73	32.7	9.42	2.35	0.710	0.045
15	29							74					0.070
	30						38	75	55.7	13.4	4.39	0.650	0.110
16	31							76					0.130
	32						39	77	71.9	21.9	5.97	1.18	0.155
17	33							78					0.205
	34						40	79	91.5	27.2	9.19	1.75	0.200
18	35							80					0.190
	36						41	81	115	36.3	10.0	1.81	0.320
19	37							82					0.315
	38						42	83	150	45.3	10.0	1.60	0.205
20	39							84					0.175
	40						43	85	197	48.2	9.69	1.75	0.280
21	41							86					0.395
	42						44	87	203	53.3	11.1	1.97	0.420
22	43							88					0.445
	44						45	89	174	55.7	14.8	2.82	0.480
23	45							90					0.390

Table 5.2 (Continued)

DATE 6 July 1956
TIME 1400-1410 CST

CONCENTRATION (mg m^{-3})

RUN NO. 5

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	159	47.0	11.8	2.26	0.370		136					
	92					0.440	69	137					
47	93	156	44.4	10.4	1.75	0.320		138					
	94					0.285	70	139					
48	95	159	40.1	8.87	1.26	0.360		140					
	96					0.280	71	141					
49	97	137	28.5	5.30	1.18	0.240		142					
	98					0.155	72	143					
50	99	103	19.1	5.04	1.00	0.105		144					
	100					0.075	73	145					
51	101	67.4	11.8	2.50	0.365	0.035		146					
	102						74	147					
52	103	39.9	5.09	0.950	0.040			148					
	104						75	149					
53	105	16.4	1.56	0.335				150					
	106						76	151					
54	107	8.01	0.415	0.040				152					
	108						77	153					
55	109	2.87	0.050					154					
	110						78	155					
56	111	1.23	0.040					156					
	112						79	157					
57	113	0.570	0.055					158					
	114						80	159					
58	115	0.075						160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 6 July 1956
TIME 1700-1710 CST

CONCENTRATION (mg m^{-3})

RUN NO. 6

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65	0.040				
11	21							66					
	22						34	67	0.455				
12	23							68					
	24						35	69	1.85	0.060			
13	25							70					
	26						36	71	5.37	0.605			
14	27							72					
	28						37	73	18.9	2.45	0.200		
15	29							74					
	30						38	75	46.1	9.84	1.52	0.035	
16	31							76					0.025
	32						39	77	81.5	23.0	2.72	0.235	0.035
17	33							78					0.055
	34						40	79	118	34.4	6.42	0.690	0.095
18	35							80					0.135
	36						41	81	188	47.3	11.5	1.85	0.150
19	37							82					0.255
	38						42	83	240	62.9	14.6	3.25	0.440
20	39							84					0.835
	40						43	85	261	80.6	17.5	3.50	0.755
21	41							86					0.755
	42						44	87	251	80.3	24.2	4.00	0.765
22	43							88					0.865
	44						45	89	263	70.2	19.0	4.24	0.885
23	45							90					0.795

Table 5.2 (Continued)

DATE 6 July 1956
TIME 1700-1710 CST

CONCENTRATION (mg m^{-3})

RUN NO. 6

POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	218	59.3	14.3	3.27	0.960
	92					1.03
47	93	182	65.3	13.7	3.23	1.12
	94					0.920
48	95	146	45.2	11.9	3.23	0.720
	96					0.520
49	97	133	35.1	10.5	2.05	0.570
	98					0.460
50	99	106	31.4	6.12	1.43	0.320
	100					0.255
51	101	72.5	16.5	3.95	0.615	0.075
	102					0.020
52	103	46.7	8.66	2.63	0.175	0.020
	104					0.155
53	105	19.5	3.66	0.835	0.020	
	106					
54	107	8.64	1.65	0.095		
	108					
55	109	3.02	0.445			
	110					
56	111	0.610	0.060			
	112					
57	113	0.065				
	114					
58	115					
	116					
59	117					
	118					
60	119					
	120					
61	121					
	122					
62	123					
	124					
63	125					
	126					
64	127					
	128					
65	129					
	130					
66	131					
	132					
67	133					
	134					
68	135					

POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m
	136					
69	137					
	138					
70	139					
	140					
71	141					
	142					
72	143					
	144					
73	145					
	146					
74	147					
	148					
75	149					
	150					
76	151					
	152					
77	153					
	154					
78	155					
	156					
79	157					
	158					
80	159					
	160					
81	161					
	162					
82	163					
	164					
83	165					
	166					
84	167					
	168					
85	169					
	170					
86	171					
	172					
87	173					
	174					
88	175					
	176					
89	177					
	178					
90	179					
	180					
91	181					

Table 5.2 (Continued)

DATE 10 July 1956
TIME 1400-1410 CST

CONCENTRATION (mg m^{-3})

RUN NO. 7

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	35.4	5.18			
2	3							48					
	4						25	49	35.1	8.25	0.005		
3	5							50					
	6						26	51	48.6	7.88	0.020		
4	7							52					
	8						27	53	55.1	9.68	0.395		
5	9							54					
	10						28	55	62.1	11.6	1.28		
6	11							56					
	12						29	57	73.1	13.8	3.60		
7	13							58					
	14						30	59	70.1	11.1	2.35		
8	15							60					
	16						31	61	55.1	10.1	1.74		
9	17							62					
	18						32	63	54.3	8.42	2.11		
10	19							64					
	20						33	65	46.1	6.83	3.18		
11	21							66					
	22						34	67	54.0	7.26	2.14		
12	23							68					
	24						35	69	43.1	5.60	1.21	0.035	
13	25							70					
	26						36	71	38.4	5.12	0.975	0.035	
14	27							72					
	28						37	73	29.0	5.69	0.645	0.140	
15	29							74					
	30						38	75	29.3	8.46	0.435	0.100	
16	31	0.015						76					
	32						39	77	39.6	7.88	0.465	0.165	
17	33	0.015						78					
	34						40	79	49.1	11.3	0.905	0.400	
18	35	0.130						80					
	36						41	81	85.7	18.6	2.86	0.210	
19	37	0.830	0.035					82					
	38						42	83	63.5	18.8	4.21	0.270	
20	39	1.76	0.035					84					0.035
	40						43	85	82.4	22.4	4.49	0.380	0.050
21	41	6.98	0.260					86					0.035
	42						44	87	97.8	23.3	4.57	0.550	0.060
22	43	15.2	0.930					88					0.045
	44						45	89	87.9	M	4.64	0.700	0.045
23	45	26.3	1.79	0.030				90					0.030

Table 5.2 (Continued)

DATE 10 July 1956
TIME 1400-1410 CST

CONCENTRATION (mg m^{-3})

RUN NO. 7

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	79.4	19.4	3.23	0.760	0.065		136					
	92					0.040	69	137	68.0	11.2	1.25		
47	93	67.4	17.4	4.41	0.680	0.035		138					
	94					0.020	70	139	39.0	6.90	0.840		
48	95	54.3	15.5	3.47	0.390	0.025		140					
	96					0.035	71	141	32.7	3.29	0.380		
49	97	46.4	11.7	2.28	0.305	0.045		142					
	98					0.025	72	143	28.4	3.45			
50	99	40.7	10.2	1.89	0.360	0.035		144					
	100					0.040	73	145	21.6	5.96	0.110		
51	101	53.9	11.3	1.78	0.430	0.040		146					
	102					0.040	74	147	24.6	3.24			
52	103	56.7	11.8	1.81	0.480	0.010		148					
	104					0.025	75	149	18.5	0.755			
53	105	58.2	11.7	1.65	0.380	0.035		150					
	106					0.035	76	151	12.0	0.175			
54	107	41.6	8.82	1.92	0.265	0.030		152					
	108					0.060	77	153	17.3				
55	109	30.5	6.77	1.67	0.385	0.050		154					
	110					0.045	78	155	14.9				
56	111	33.5	5.69	1.85	0.450	0.065		156					
	112					0.040	79	157	7.98				
57	113	32.9	5.91	1.53	0.285	0.070		158					
	114					0.025	80	159	1.20				
58	115	39.6	5.73	1.55	0.220	0.045		160					
	116					0.065	81	161	0.115				
59	117	51.2	7.79	1.2	0.170	0.040		162					
	118					0.045	82	163	0.085				
60	119	61.1	9.71	1.39	0.175	0.045		164					
	120					0.020	83	165	0.040				
61	121	57.0	13.5	2.51	0.140	0.010		166					
	122					0.010	84	167	0.015				
62	123	47.9	14.4	5.14	0.125	0.030		168					
	124					0.050	85	169	0.030				
63	125	54.3	16.1	3.69	0.070	0.025		170					
	126					0.035	86	171	0.020				
64	127	53.4	17.0	3.42	0.375			172					
	128						87	173	0.035				
65	129	65.1	19.5	4.18	0.490			174					
	130						88	175	0.045				
66	131	70.4	19.4	2.89	0.135			176					
	132						89	177	0.025				
67	133	65.6	21.2	2.44	0.060			178					
	134						90	179	0.020				
68	135	73.8	14.4	1.66				180					
							91	181					

DATE 10 July 1956
TIME 1700-1710 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 8

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63	0.025				
10	19							64					
	20						33	65	0.030				
11	21							66					
	22						34	67	0.030				
12	23							68					
	24						35	69	0.010				
13	25							70					
	26						36	71	0.025				
14	27							72					
	28						37	73	0.170				
15	29							74					
	30						38	75	5.34	0.025			
16	31							76					
	32						39	77	14.6	0.130	0.035		
17	33							78					
	34						40	79	18.2	1.79	0.100		
18	35							80					
	36						41	81	20.7	4.71	0.580		
19	37							82					
	38						42	83	27.0	6.23	1.46	0.205	
20	39							84					0.045
	40						43	85	54.9	11.5	2.75	0.440	0.060
21	41							86					0.060
	42						44	87	101	23.6	3.03	0.610	0.150
22	43							88					0.190
	44						45	89	186	51.2	6.49	1.10	0.205
23	45							90					0.290

DATE 10 July 1956
TIME 1700-1710 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.8

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	260	73.1	11.8	2.34	0.355		136					
	92					0.445	69	137	0.035				
47	93	341	89.9	23.6	3.74	0.585		138					
	94					0.525	70	139					
48	95	422	115	25.7	3.79	0.535		140					
	96					0.675	71	141					
49	97	381	111	26.4	3.97	0.695		142					
	98					0.695	72	143					
50	99	326	92.1	23.9	4.25	0.495		144					
	100					0.545	73	145					
51	101	267	68.3	17.7	3.35	0.635		146					
	102					0.725	74	147					
52	103	204	50.6	13.1	2.71	0.605		148					
	104					0.495	75	149					
53	105	140	41.1	10.5	1.80	0.545		150					
	106					0.425	76	151					
54	107	91.1	24.0	5.04	1.15	0.300		152					
	108					0.300	77	153					
55	109	62.7	9.33	2.97	1.15	0.220		154					
	110					0.165	78	155					
56	111	61.2	8.55	2.46	0.530	0.160		156					
	112					0.055	79	157					
57	113	36.3	6.87	2.49	0.200	0.045		158					
	114					0.030	80	159					
58	115	23.0	7.26	1.31	0.070	0.020		160					
	116						81	161					
59	117	14.0	3.45	0.330				162					
	118						82	163					
60	119	10.9	1.86	0.180				164					
	120						83	165					
61	121	10.4	0.735					166					
	122						84	167					
62	123	10.1	1.08					168					
	124						85	169					
63	125	8.46	0.975					170					
	126						86	171					
64	127	5.42	0.975					172					
	128						87	173					
65	129	2.06	1.01					174					
	130						88	175					
66	131	1.29	0.135					176					
	132						89	177					
67	133	0.440	0.070					178					
	134						90	179					
68	135	0.235						180					
							91	181					

Table 5.2 (Continued)

DATE 11 July 1956
TIME 1000-1010 CST

CONCENTRATION (mg m^{-3})

RUN NO. 9

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	900m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77					
17	33							78					
	34						40	79					
18	35							80					
	36						41	81					
19	37							82					
	38						42	83	0.025				
20	39							84					
	40						43	85	0.250				
21	41							86					
	42						44	87	1.50				
22	43							88					
	44						45	89	5.00	0.290			
23	45							90					

Table 5.2 (Continued)

DATE 11 July 1956
TIME 1000-1010 CST

CONCENTRATION (mg m^{-3})

RUN NO.9

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	20.4	2.30					136					0.035
	92						69	137	19.8	6.78	1.16	0.258	0.045
47	93	39.8	5.79					138					0.020
	94						70	139	12.8	4.28	0.515	0.125	0.015
48	95	44.9	9.18	0.120				140					
	96						71	141	11.3	1.48	0.200	0.115	
49	97	56.1	17.3	1.68				142					
	98						72	143	5.39	0.590	0.165	0.015	
50	99	67.2	26.9	4.67	0.175			144					
	100					0.035	73	145	2.21	0.090	0.040	0.010	
51	101	93.5	28.2	8.93	1.00	0.055		146					
	102					0.135	74	147	1.00	0.020			
52	103	115	32.9	9.83	2.48	0.255		148					
	104					0.415	75	149	0.150				
53	105	148	42.6	12.5	2.90	0.520		150					
	106					0.460	76	151					
54	107	183	56.1	14.2	2.14	0.440		152					
	108					0.470	77	153					
55	109	200	55.7	11.3	2.26	0.470		154					
	110					0.450	78	155					
56	111	198	45.9	10.9	2.29	0.405		156					
	112					0.375	79	157					
57	113	171	44.4	12.2	2.53	0.450		158					
	114					0.470	80	159					
58	115	159	48.5	12.6	2.68	0.510		160					
	116					0.340	81	161					
59	117	130	41.3	10.6	2.63	0.245		162					
	118					0.315	82	163					
60	119	123	38.7	9.73	1.85	0.380		164					
	120					0.385	83	165					
61	121	114	34.5	8.46	2.12	0.395		166					
	122					0.450	84	167					
62	123	102	26.0	6.50	1.57	0.405		168					
	124					0.295	85	169					
63	125	72.9	17.6	4.78	0.925	0.200		170					
	126					0.150	86	171					
64	127	48.6	11.5	3.31	0.825	0.115		172					
	128					0.080	87	173					
65	129	41.0	8.63	2.97	0.595	0.085		174					
	130					0.130	88	175					
66	131	32.9	7.04	2.29	0.655	0.155		176					
	132					0.145	89	177					
67	133	26.9	8.31	2.48	0.675	0.095		178					
	134					0.060	90	179					
68	135	25.2	8.90	2.75	0.535	0.050		180					
							91	181					

Table 5.2 (Continued)

DATE 11 JULY 1956
TIME 1200 - 1210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 10

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91							136					0.055
	92						69	137	170	41.1	6.21	1.22	0.065
47	93							138					0.095
	94						70	139	158	29.7	6.88	0.860	0.125
48	95	0.175						140					0.115
	96						71	141	137	24.3	7.76	0.690	0.090
49	97	0.590						142					0.100
	98						72	143	117	24.3	7.74	0.700	0.070
50	99	3.69						144					0.130
	100						73	145	117	24.2	5.34	0.780	0.135
51	101	8.78						146					
	102						74	147	102	24.3	2.96	0.630	
52	103	15.5						148					
	104						75	149	97.5	27.6	3.32	0.600	
53	105	25.5						150					
	106						76	151	110	28.2	4.05	0.120	
54	107	36.3	0.070					152					
	108						77	153	88.2	21.2	2.06	0.120	
55	109	39.0	0.890					154					
	110						78	155	80.7	11.4	1.19	0.190	
56	111	47.6	1.86					156					
	112						79	157	57.8	10.6	0.785	0.325	
57	113	38.1	4.20	0.195				158					
	114						80	159	45.2	8.61	1.02	0.150	
58	115	38.7	8.73	0.485	0.110			160					
	116						81	161	31.2	6.84	1.82	0.035	
59	117	32.3	9.17	0.605	0.150			162					
	118						82	163	25.8	3.80	1.74		
60	119	38.7	10.3	0.825	0.095			164					
	120					0.040	83	165	20.3	1.85	0.775		
61	121	52.5	8.72	1.51	0.250	0.040		166					
	122					0.050	84	167	17.7	1.36	0.030		
62	123	61.7	12.2	2.25	0.540	0.070		168					
	124					0.070	85	169	12.8	1.16			
63	125	90.0	17.7	4.28	0.590	0.055		170					
	126					0.050	86	171	6.30	0.935			
64	127	124	30.0	6.95	0.560	0.90		172					
	128					0.110	87	173	3.68	0.490			
65	129	161	37.4	11.4	0.820	0.090		174					
	130					0.120	88	175	1.50	0.055			
66	131	179	39.2	8.18	2.70	0.165		176					
	132					0.175	89	177	0.335				
67	133	165	39.9	10.4	1.98	0.155		178					
	134					0.150	90	179					
68	135	164	43.1	10.1	1.28	0.125		180					
							91	181					

DATE 14 July 1956
TIME 0800-0810 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 11

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	300m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73	0.065				
15	29							74					
	30						38	75	0.535	0.025			
16	31							76					
	32						39	77	2.39	0.180	0.070		
17	33							78					
	34						40	79	6.95	0.610	0.055		
18	35							80					
	36						41	81	16.7	1.61	0.175	0.020	
19	37							82					
	38						42	83	33.6	4.37	0.845	0.185	
20	39							84					
	40						43	85	63.9	14.6	2.86	0.440	
21	41							86					0.020
	42						44	87	113	28.4	6.47	1.35	0.095
22	43							88					0.235
	44						45	89	107	49.7	11.8	1.76	0.340
23	45							90					430

Table 5.2 (Continued)

DATE 14 July 1956
TIME 0800-0810 CST

CONCENTRATION (mg m^{-3})

RUN NO. 11

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	209	72.3	20.5	3.64	0.480		136					
	92					0.950	69	137					
47	93	263	87.0	28.9	6.67	1.27		138					
	94					1.67	70	139					
48	95	273	89.3	29.5	7.61	1.68		140					
	96					1.72	71	141					
49	97	269	83.0	27.7	7.10	1.42		142					
	98					1.02	72	143					
50	99	251	75.3	23.0	4.57	0.820		144					
	100					0.590	73	145					
51	101	204	56.6	11.6	2.46	0.383		146					
	102					0.225	74	147					
52	103	124	32.0	5.86	0.775	0.170		148					
	104					0.085	75	149					
53	105	68.3	13.8	1.54	0.245	0.015		150					
	106					0.020	76	151					
54	107	35.4	4.59	0.475	0.030			152					
	108						77	153					
55	109	19.4	0.600	0.030	0.020			154					
	110						78	155					
56	111	5.87	0.070	0.020				156					
	112						79	157					
57	113	0.990	0.025					158					
	114						80	159					
58	115	0.080						160					
	116						81	161					
59	117	0.045						162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 14 July 1956
TIME 1000-1010 CST

CONCENTRATION (mg m^{-3})

RUN NO.12

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77	0.115				
17	33							78					
	34						40	79	1.39				
18	35							80					
	36						41	81	4.95	0.105			
19	37							82					
	38						42	83	5.28	1.50			
20	39							84					
	40						43	85	10.3	3.23			
21	41							86					
	42						44	87	20.1	5.00	0.095		
22	43							88					
	44						45	89	39.8	8.40	1.75	0.030	
23	45							90					

Table 5.2 (Continued)

DATE 14 July 1956
TIME 1000-1010 CST

CONCENTRATION (mg m^{-3})

RUN NO.12

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	67.7	18.9	3.76	0.320			136					
	92					0.040	69	137					
47	93	84.0	25.7	6.96	1.49	0.115		138					
	94					0.380	70	139					
48	95	92.7	24.5	7.67	1.78	0.470		140					
	96					0.480	71	141					
49	97	86.7	26.3	7.02	1.67	0.450		142					
	98					0.440	72	143					
50	99	109	36.0	9.17	2.13	0.510		144					
	100					0.630	73	145					
51	101	130	47.0	16.0	3.55	0.770		146					
	102					0.970	74	147					
52	103	173	57.2	18.2	5.03	1.22		148					
	104					1.46	75	149					
53	105	216	61.5	20.6	5.46	1.49		150					
	106					1.58	76	151					
54	107	218	58.7	19.1	4.97	1.54		152					
	108					1.34	77	153					
55	109	186	60.0	19.6	4.18	1.04		154					
	110					0.580	78	155					
56	111	168	53.9	17.2	3.44	0.310		156					
	112					0.130	79	157					
57	113	129	44.6	10.7	2.08	0.075		158					
	114					0.060	80	159					
58	115	107	31.4	5.25	0.340			160					
	116						81	161					
59	117	78.2	13.6	2.83				162					
	118						82	163					
60	119	48.8	5.03	0.735				164					
	120						83	165					
61	121	27.2	2.70	0.040				166					
	122						84	167					
62	123	12.1	0.590					168					
	124						85	169					
63	125	12.7	0.085					170					
	126						86	171					
64	127	0.235						172					
	128						87	173					
65	129	0.330						174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 22 July 1956
TIME 2000-2010 CST

CONCENTRATION (mg m^{-3})

RUN NO.13

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77	0.065				
17	33							78					
	34						40	79	0.100				
18	35							80					
	36						41	81	0.395	0.455			
19	37							82					
	38						42	83	0.790	2.22			
20	39							84					
	40						43	85	3.45	6.96			
21	41							86					
	42						44	87	10,3	13,8			
22	43							88					
	44						45	89	24.6	120	0.365		
23	45							90					

DATE 22 July 1956
TIME 2000 - 2010 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 13

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	103	246	30.2				136					
	92						69	137					
47	93	87.3	281	87.1				138					
	94						70	139					
48	95	114	419	287	7.25			140					
	96						71	141					
49	97	174	330	490	53.0	0.035		142					
	98					0.460	72	143					
50	99	174	227	253	113	7.93		144					
	100					20.9	73	145					
51	101	161	146	141	58.8	17.6		146					
	102					17.9	74	147					
52	103	141	104	118	51.5	17.7		148					
	104					15.7	75	149					
53	105	105	82.4	127	60.3	18.4		150					
	106					24.3	76	151					
54	107	83.3	76.4	130	77.0	32.7		152					
	108					47.2	77	153					
55	109	60.0	65.4	138	98.3	74.6		154					
	110					90.1	78	155					
56	111	40.4	49.1	122	131	104		156					
	112					74.3	79	157					
57	113	25.5	36.5	78.3	115	44.5		158					
	114					0.375	80	159					
58	115	16.5	24.9	35.0	30.3	0.030		160					
	116					0.025	81	161					
59	117	13.1	14.0	8.83	0.275			162					
	118						82	163					
60	119	10.8	5.39	1.33	0.020			164					
	120						83	165					
61	121	5.70	1.41	0.050				166					
	122						84	167					
62	123	2.87	0.175					168					
	124						85	169					
63	125	1.09						170					
	126						86	171					
64	127	0.295						172					
	128						87	173					
65	129	0.075						174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 22 July 1956
TIME 2200-2210 CST

CONCENTRATION (mg m^{-3})

RUN NO.14

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49	0.110				
3	5							50					
	6						26	51	0.145				
4	7							52					
	8						27	53	0.210				
5	9							54					
	10						28	55	0.260				
6	11							56					
	12						29	57	0.315				
7	13							58					
	14						30	59	0.390				
8	15							60					
	16						31	61	0.600	0.040			
9	17							62					
	18						32	63	2.70	0.080			
10	19							64					
	20						33	65	18.3	0.115			
11	21							66					
	22						34	67	45.6	0.355			
12	23							68					
	24						35	69	68.9	7.53	0.015		
13	25							70					
	26						36	71	143	61.4	0.085		
14	27							72					
	28						37	73	255	168	4.84		
15	29							74					
	30						38	75	455	312	46.4	0.020	
16	31							76					
	32						39	77	611	570	131	3.32	
17	33							78					
	34						40	79	680	822	402	23.1	
18	35							80					
	36						41	81	702	707	402	146	0.450
19	37							82					2.13
	38						42	83	552	339	93.8	115	7.37
20	39							84					17.0
	40						43	85	426	67.4	5.87	25.8	21.6
21	41							86					5.77
	42						44	87	228	7.50	1.83	14.4	4.42
22	43							88					3.92
	44						45	89	101	3.15	1.49	8.18	2.78
23	45							90					2.75

Table 5.2 (Continued)

DATE 22 July 1956
TIME 2200-2210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 14

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	9.69	2.54	1.20	0.335	2.83		136					
	92					2.28	69	137					
47	93	4.28	2.07	1.13	3.47	2.64		138					
	94					2.90	70	139					
48	95	3.68	1.80	0.930	1.79	3.17		140					
	96					3.33	71	141					
49	97	3.51	2.00	0.830	1.18	3.43		142					
	98					3.49	72	143					
50	99	3.44	1.95	0.850	0.860	2.96		144					
	100					1.88	73	145					
51	101	3.41	1.86	0.900	0.620	1.76		146					
	102					1.38	74	147					
52	103	4.05	1.94	1.02	0.450	1.28		148					
	104					1.22	75	149					
53	105	3.90	2.07	1.23	0.460	0.775		150					
	106					0.480	76	151					
54	107	3.81	2.19	1.29	0.465	0.460		152					
	108					0.305	77	153					
55	109	3.51	2.03	1.10	0.385	0.185		154					
	110					0.150	78	155					
56	111	2.81	1.79	0.940	0.300	0.090		156					
	112					0.060	79	157					
57	113	2.12	1.62	0.760	0.240	0.025		158					
	114						80	159					
58	115	1.50	1.34	0.570	0.155			160					
	116						81	161					
59	117	1.06	0.985	0.415	0.090			162					
	118						82	163					
60	119	0.725	0.730	0.180				164					
	120						83	165					
61	121	0.450	0.330	0.030				166					
	122						84	167					
62	123	0.160	0.055					168					
	124						85	169					
63	125	0.070						170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 23 July 1956
TIME 0800-0810 CST

CONCENTRATION (mg m^{-3})

RUN NO.15

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73	0.025				
15	29							74					
	30						38	75	1.25				
16	31							76					
	32						39	77	7.40				
17	33							78					
	34						40	79	9.69				
18	35							80					
	36						41	81	16.2	0.025			
19	37							82					
	38						42	83	28.2	0.190			
20	39							84					
	40						43	85	29.7	1.21			
21	41							86					
	42						44	87	31.1	4.38			
22	43							88					
	44						45	89	20.6	5.06			
23	45							90					

DATE 23 July 1956
TIME 0800-0810 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.15

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	19.7	13.5					136					
	92						69	137	4.31	2.76	0.135		
47	93	29.1	6.12	0.165				138					
	94						70	139	0.860	0.200			
48	95	41.1	4.11	0.435				140					
	96						71	141	0.040				
49	97	70.1	7.17	0.740	0.035			142					
	98						72	143					
50	99	99.6	15.6	0.950	0.030			144					
	100						73	145					
51	101	146	21.6	2.26	0.110			146					
	102						74	147					
52	103	197	38.6	3.89	0.335			148					
	104					0.065	75	149					
53	105	245	53.3	5.74	0.500	0.150		150					
	106					0.205	76	151					
54	107	291	75.9	8.52	0.930	0.365		152					
	108					0.410	77	153					
55	109	336	75.9	14.5	1.23	0.470		154					
	110					0.460	78	155					
56	111	414	80.4	21.1	2.44	0.390		156					
	112					0.360	79	157					
57	113	414	107	21.7	3.91	0.465		158					
	114					0.535	80	159					
58	115	408	100	20.6	4.78	0.495		160					
	116					0.450	81	161					
59	117	353	88.2	21.6	3.76	0.445		162					
	118					0.415	82	163					
60	119	249	76.5	19.6	2.25	0.410		164					
	120					0.310	83	165					
61	121	222	61.5	15.0	2.32	0.245		166					
	122					0.175	84	167					
62	123	201	48.0	12.3	2.09	0.270		168					
	124					0.245	85	169					
63	125	125	38.4	9.61	0.530	0.220		170					
	126					0.270	86	171					
64	127	111	30.6	7.59	0.520	0.220		172					
	128					0.255	87	173					
65	129	86.1	19.7	6.90	0.780	0.140		174					
	130					0.045	88	175					
66	131	46.2	17.1	4.94	1.11			176					
	132						89	177					
67	133	34.4	11.9	4.11	0.415			178					
	134						90	179					
68	135	16.5	4.95	0.870	0.070			180					
							91	181					

Table 5.2 (Continued)

DATE 23 July 1956
TIME 1000-1010 CST

CONCENTRATION (mg m^{-3})

RUN NO.16

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65	1.10				
11	21							66					
	22						34	67	10.3				
12	23							68					
	24						35	69	20.0	0.035			
13	25							70					
	26						36	71	29.9	0.110			
14	27							72					
	28						37	73	39.9	0.550			
15	29							74					
	30						38	75	48.0	2.25			
16	31							76					
	32						39	77	64.1	7.17	0.025		
17	33							78					
	34						40	79	84.8	12.3	0.030		
18	35							80					
	36						41	81	125	20.7	0.375		
19	37							82					
	38						42	83	136	21.6	1.71		
20	39							84					
	40						43	85	143	30.3	1.74		
21	41							86					
	42						44	87	179	32.7	2.69		
22	43							88					
	44						45	89	182	34.4	3.82	0.085	
23	45							90					

Table 5.2 (Continued)

DATE 23 July 1956
TIME 1000-1010 CST

CONCENTRATION (mg m^{-3})

RUN NO. 16

POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m	POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m
46	91	165	29.7	5.14	0.075	0.015		136					
	92					0.030	69	137	3.08	0.140	0.015		
47	93	143	26.9	6.36	0.625	0.030		138					
	94					0.040	70	139	1.33	0.035			
48	95	155	24.0	6.39	0.345	0.045		140					
	96					0.045	71	141	0.055	0.025			
49	97	121	21.6	5.16	0.340	0.045		142					
	98					0.035	72	143	0.025				
50	99	118	22.8	3.62	0.190	0.030		144					
	100					0.015	73	145					
51	101	116	21.9	2.54	0.150	0.025		146					
	102					0.015	74	147					
52	103	103	15.6	1.86	0.245	0.045		148					
	104					0.050	75	149					
53	105	93.9	15.5	1.27	0.190	0.045		150					
	106					0.030	76	151					
54	107	82.1	13.8	0.635	0.215	0.040		152					
	108					0.040	77	153					
55	109	80.9	12.8	1.04	0.235	0.045		154					
	110					0.080	78	155					
56	111	81.3	11.8	1.89	0.190	0.070		156					
	112					0.075	79	157					
57	113	71.7	10.8	1.32	0.585	0.040		158					
	114					0.055	80	159					
58	115	61.2	9.26	2.41	0.715	0.050		160					
	116					0.065	81	161					
59	117	84.3		2.89	0.905	0.035		162					
	118					0.075	82	163					
60	119	99.0	24.9	4.03	0.955	0.045		164					
	120					0.030	83	165					
61	121	87.0	22.5	4.40	0.625			166					
	122						84	167					
62	123	74.7	23.1	4.42	0.695			168					
	124						85	169					
63	125	58.8	15.9	350	0.380			170					
	126						86	171					
64	127	48.6	10.8	2.49	0.135			172					
	128						87	173					
65	129	35.7	8.49	0.865				174					
	130						88	175					
66	131	27.8	3.08	0.475				176					
	132						89	177					
67	133	22.8	1.38	0.240				178					
	134						90	179					
68	135	14.8	0.930	0.025				180					
							91	181					

Table 5.2 (Continued)

DATE 23 July 1956
TIME 2000-2010 CST

CONCENTRATION (mg m^{-3})

RUN NO.17

POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m	POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73	0.160				
15	29							74					
	30						38	75	1.40	0.030			
16	31							76					
	32						39	77	20.1	0.345			
17	33							78					
	34						40	79	54.3	2.96	0.110	0.025	
18	35							80					
	36						41	81	159	20.1	1.84	0.150	
19	37							82					0.085
	38						42	83	302	76.2	13.4	2.03	0.435
20	39							84					1.86
	40						43	85	518	177	46.8	13.1	4.94
21	41							86					8.09
	42						44	87	633	269	83.2	26.9	9.74
22	43							88					9.04
	44						45	89	645	254	86.2	25.7	6.28
23	45							90					2.98

DATE 23 July 1956
TIME 2000 - 2010 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.17

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	561	164	46.0	8.63	0.755		136					
	92					0.285	69	137					
47	93	330	90.6	14.4	1.11	0.035		138					
	94						70	139					
48	95	195	33.2	2.70				140					
	96						71	141					
49	97	106	8.93	0.245				142					
	98						72	143					
50	99	29.4	1.00					144					
	100						73	145					
51	101	8.72	0.090					146					
	102						74	147					
52	103	1.19						148					
	104						75	149					
53	105	0.235						150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 23 July 1956
TIME 2200-2210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 18

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77	0.095				
17	33							78					
	34						40	79	0.645				
18	35							80					
	36						41	81	5.57	0.095			
19	37							82					
	38						42	83	29.6	1.59	0.025		
20	39							84					
	40						43	85	106	17.1	0.730		
21	41							86					
	42						44	87	218	69.6	14.3	0.640	
22	43							88					
	44						45	89	368	158	50.9	11.7	0.040
23	45							90					0.665

Table 5.2 (Continued)

DATE 23 July 1956
TIME 2200 -2210 CST

CONCENTRATION (mg m^{-3})

RUN NO18

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	584	257	95.0	32.3	5.04		136					
	92					11.6	69	137					
47	93	620	242	82.4	23.5	14.0		138					
	94					11.3	70	139					
48	95	615	177	51.4	17.9	8.49		140					
	96					8.34	71	141					
49	97	467	152	52.0	16.8	9.35		142					
	98					6.86	72	143					
50	99	321	118	31.6	8.56	2.38		144					
	100					0.435	73	145					
51	101	206	42.2	6.64	0.695	0.080		146					
	102					0.075	74	147					
52	103	72.6	6.66	0.545	0.055	0.035		148					
	104						75	149					
53	105	17.4	0.783	0.065				150					
	106						76	151					
54	107	3.15	0.085					152					
	108						77	153					
55	109	1.49						154					
	110						78	155					
56	111	0.025						156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 25 July 1956
TIME 1100-1110 CST

CONCENTRATION (mg m^{-3})

RUN NO.19

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	2.52				
2	3							48					
	4						25	49	4.13				
3	5							50					
	6						26	51	11.3	0.225			
4	7							52					
	8						27	53	21.0	1.91	0.025		
5	9							54					
	10						28	55	33.5	4.38	0.330		
6	11							56					
	12						29	57	48.6	8.57	0.745		
7	13							58					
	14						30	59	57.2	14.2	1.86	0.180	
8	15							60					
	16						31	61	76.2	20.4	3.36	0.620	
9	17							62					
	18						32	63	108	27.9	5.65	0.520	
10	19							64					0.045
	20						33	65	144	39.2	8.21	0.735	0.090
11	21							66					0.105
	22						34	67	141	41.3	12.1	1.73	0.090
12	23							68					0.125
	24						35	69	164	41.3	10.5	2.30	0.135
13	25							70					0.185
	26						36	71	182	33.8	6.79	2.09	0.230
14	27							72					0.365
	28						37	73	213	47.0	4.72	0.980	0.210
15	29							74					0.220
	30						38	75	218	54.8	6.41	0.655	0.225
16	31							76					0.190
	32						39	77	210	51.0	6.60	1.08	0.185
17	33							78					0.175
	34						40	79	192	51.0	8.21	1.89	0.160
18	35							80					0.245
	36						41	81	198	47.9	11.3	1.81	0.260
19	37							82					0.370
	38						42	83	180	47.1	13.4	1.88	0.285
20	30							84					0.215
	40						43	85	152	49.7	11.4	2.13	0.135
21	41							86					0.135
	42						44	87	142	36.9	10.8	1.87	0.090
22	43							88					0.075
	44						45	89	107	27.3	7.28	0.445	0.035
23	45							90					0.015

Table 5.2 (Continued)

DATE 25 July 1956
TIME 1100 - 1110 CST

CONCENTRATION (mg m^{-3})

RUN NO. 19

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	62.3	21.8	3.50	0.090			136					
	92						69	137					
47	93	44.3	13.2	1.16				138					
	94						70	139					
48	95	30.3	4.63	0.390				140					
	96						71	141					
49	97	23.0	1.59	0.110				142					
	98						72	143					
50	99	16.8	0.970					144					
	100						73	145					
51	101	10.2	0.140					146					
	102						74	147					
52	103	2.85	0.025					148					
	104						75	149					
53	105	0.930						150					
	106						76	151					
54	107	0.115						152					
	108						77	153					
55	109	0.045						154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 25 July 1956
TIME 1300-1310 CST

CONCENTRATION (mg m^{-3})

RUN NO. 20

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57	0.180				
7	13							58					
	14						30	59	1.23				
8	15							60					
	16						31	61	2.79	0.060			
9	17							62					
	18						32	63	5.60	0.615			
10	19							64					
	20						33	65	9.57	2.36	0.015		
11	21							66					
	22						34	67	20.4	2.75	0.350		
12	23							68					0.025
	24						35	69	45.6	8.22	1.94	0.105	0.050
13	25							70					0.125
	26						36	71	89.0	18.6	4.47	1.09	0.235
14	27							72					0.350
	28						37	73	130	38.0	8.95	1.90	0.470
15	29							74					0.660
	30						38	75	149	51.0	12.9	2.76	0.795
16	31							76					0.735
	32						39	77	162	52.2	14.7	3.42	0.735
17	33							78					0.565
	34						40	79	170	47.1	15.9	3.06	0.495
18	35							80					0.460
	36						41	81	170	46.5	11.4	2.88	0.305
19	37							82					0.525
	38						42	83	171	46.5	10.7	2.08	0.445
20	39							84					0.400
	40						43	85	170	39.6	9.22	2.33	0.335
21	41							86					0.315
	42						44	87	146	36.6	8.74	1.97	0.355
22	43							88					0.430
	44						45	89	134	30.2	8.95	1.42	0.380
23	45							90					0.230

Table 5.2 (Continued)

DATE 25 July 1956
TIME 1300 - 1310 CST

CONCENTRATION (mg m^{-3})

RUN NO. 20

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	120	33.9	8.16	1.47	0.205		136					
	92					0.210	69	137					
47	93	114	32.7	6.56	1.25	0.110		138					
	94					0.075	70	139					
48	95	99.9	27.9	5.62	1.01	0.060		140					
	96					0.065	71	141					
49	97	83.4	20.4	4.28	0.675	0.095		142					
	98					0.050	72	143					
50	99	57.9	9.77	2.47	0.270			144					
	100						73	145					
51	101	35.6	6.24	1.49	0.030			146					
	102						74	147					
52	103	26.1	3.68	0.325				148					
	104						75	149					
53	105	21.2	0.925	0.045				150					
	106						76	151					
54	107	11.2	0.095					152					
	108						77	153					
55	109	1.88						154					
	110						78	155					
56	111	0.225						156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 25 July 1956
TIME 2200-2210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 21

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67	0.230				
12	23							68					
	24						35	69	0.925				
13	25							70					
	26						36	71	2.55	0.025			
14	27							72					
	28						37	73	6.63	0.380			
15	29							74					
	30						38	75	15.6	2.39	0.040		
16	31							76					
	32						39	77	39.3	8.70	0.975	0.095	
17	33							78					0.020
	34						40	79	66.5	22.5	5.29	1.11	0.215
18	35							80					0.595
	36						41	81	131	41.0	11.6	3.22	0.915
19	37							82					1.26
	38						42	83	210	65.9	19.1	4.72	1.11
20	39							84					1.46
	40						43	85	267	91.7	27.1	8.37	2.31
21	41							86					3.03
	42						44	87	275	96.6	29.6	9.03	3.26
22	43							88					2.95
	44						45	89	255	91.5	27.6	8.43	1.99
23	45							90					0.955

Table 5.2 (Continued)

DATE 25 July 1956
TIME 2200 -2210 CST

CONCENTRATION (mg m^{-3})

RUN NO.21

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	201	66.3	17.1	2.18	0.280		136					
	92					0.075	69	137					
47	93	129	34.7	4.98	0.485			138					
	94						70	139					
48	95	76.2	12.0	1.51	0.035			140					
	96						71	141					
49	97	35.6	1.83	0.140				142					
	98						72	143					
50	99	10.6	0.415					144					
	100						73	145					
51	101	1.36	0.085					146					
	102						74	147					
52	103	0.110						148					
	104						75	149					
53	105	0.025						150					
	106						76	151					
54	107	0.045						152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

DATE 26 July 1956
TIME 0000-0010 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.22

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65	0.235				
11	21							66					
	22						34	67	1.56				
12	23							68					
	24						35	69	4.65	0.035			
13	25							70					
	26						36	71	11.7	0.865			
14	27							72					
	28						37	73	27.0	4.22	0.060		
15	29							74					
	30						38	75	59.0	11.4	1.04		
16	31							76					
	32						39	77	117	30.8	5.92	0.230	
17	33							78					0.015
	34						40	79	170	55.8	14.4	2.37	0.040
18	35							80					0.305
	36						41	81	213	78.5	25.5	7.11	0.685
19	37							82					2.13
	38						42	83	224	81.8	27.7	8.64	2.51
20	39							84					2.31
	40						43	85	200	60.3	16.3	4.75	1.74
21	41							86					0.865
	42						44	87	143	33.8	7.45	1.71	0.450
22	43							88					0.205
	44						45	89	84.6	16.7	3.75	0.695	0.075
23	45							90					0.020

Table 5.2 (Continued)

DATE 26 July 1956
TIME 0000 - 0010 CST

CONCENTRATION (mg m^{-3})

RUN NO.22

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	37.4	6.78	0.895	0.065			136					
	92						69	137					
47	93	18.5	2.24	0.205				138					
	94						70	139					
48	95	7.08	0.480	0.070				140					
	96						71	141					
49	97	2.60	0.080	0.020				142					
	98						72	143					
50	99	0.750						144					
	100						73	145					
51	101	0.185						146					
	102						74	147					
52	103	0.030						148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 29 July 1956
TIME 2100-2110 CST

CONCENTRATION (mg m^{-3})

RUN NO.23

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	24.5	8.39	2.20	0.245	
2	3							48					
	4						25	49	16.4	3.84	0.555	0.045	
3	5							50					
	6						26	51	7.53	1.42	0.080		
4	7							52					
	8						27	53	3.60	0.360	0.025		
5	9							54					
	10						28	55	1.48	0.080	0.025		
6	11							56					
	12						29	57	0.300				
7	13							58					
	14						30	59	0.185				
8	15							60					
	16						31	61	0.045				
9	17							62					
	18						32	63					
10	19	0.060						64					
	20						33	65					
11	21	0.670						66					
	22						34	67					
12	23	3.42	0.045					68					
	24						35	69					
13	25	9.87	1.18					70					
	26						36	71					
14	27	33.6	5.04	0.120				72					
	28						37	73					
15	29	69.6	15.6	1.66	0.050			74					
	30						38	75					
16	31	95.0	32.9	7.95	0.740	0.035		76					
	32					0.165	39	77					
17	33	124	43.7	13.7	1.51	0.260		78					
	34					0.595	40	79					
18	35	145	52.8	18.1	4.81	1.24		80					
	36					1.87	41	81					
19	37	170	61.7	19.5	6.36	2.09		82					
	38					1.66	42	83					
20	39	176	55.2	16.8	3.94	1.34		84					
	40					1.15	43	85					
21	41	136	40.4	10.6	2.71	0.875		86					
	42					0.485	44	87					
22	43	94.7	23.7	5.82	1.77	0.345		88					
	44					0.125	45	89					
23	45	54.9	14.3	4.49	0.810			90					

Table 5.2 (Continued)

DATE 29 July 1956
TIME 2300-2310 CST

CONCENTRATION (mg m^{-3})

RUN NO.24

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					0.110
	2						24	47	101	34.8	10.9	2.60	0.345
2	3							48					0.795
	4						25	49	124	45.3	14.9	5.00	1.23
3	5							50					1.60
	6						26	51	158	50.4	17.0	5.58	1.81
4	7							52					1.92
	8						27	53	152	50.7	16.0	5.43	1.68
5	9							54					1.19
	10						28	55	144	46.5	14.9	4.24	0.645
6	11							56					0.435
	12						29	57	125	39.2	9.56	1.68	0.185
7	13							58					0.110
	14						30	59	86.4	22.4	4.05	0.420	0.035
8	15							60					
	16						31	61	51.5	10.0	1.73	0.055	
9	17							62					
	18						32	63	29.6	4.32	0.215		
10	19							64					
	20						33	65	13.3	0.990			
11	21							66					
	22						34	67	4.37	0.155			
12	23							68					
	24						35	69	1.44				
13	25							70					
	26						36	71	0.250				
14	27							72					
	28						37	73	0.025				
15	29	0.040						74					
	30						38	75					
16	31	0.130						76					
	32						39	77					
17	33	0.510	0.020					78					
	34						40	79					
18	35	0.830	0.120					80					
	36						41	81					
19	37	3.62	0.310					82					
	38						42	83					
20	39	10.0	0.800	0.050				84					
	40						43	85					
21	41	31.1	2.25	0.245				86					
	42						44	87					
22	43	53.4	9.21	1.07	0.050			88					
	44						45	89					
23	45	79.7	21.9	4.30	0.755			90					

Table 5.2 (Continued)

DATE 1 August 1956
TIME 1300-1310 CST

CONCENTRATION (mg m^{-3})

RUN NO. 25

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51	0.830				
4	7							52					
	8						27	53	7.61				
5	9							54					
	10						28	55	19.2	0.100			
6	11							56					
	12						29	57	27.3	1.67		0.020	
7	13							58					
	14						30	59	28.8	3.33	0.015	0.030	0.045
8	15							60					0.060
	16						31	61	20.6	8.73	0.730	0.050	0.050
9	17							62					0.105
	18						32	63	26.4	8.45	1.64	0.100	0.075
10	19							64					M
	20						33	65	47.6	9.05	2.64	0.125	0.045
11	21							66					0.050
	22						34	67	74.7	12.7	2.03	0.370	0.060
12	23							68					0.110
	24						35	69	96.0	17.3	2.13	0.330	0.090
13	25							70					0.075
	26						36	71	129	21.9	1.25	0.440	0.055
14	27							72					0.035
	28						37	73	212	23.6	1.89	1.46	0.030
15	29							74					0.035
	30						38	75	264	41.0	3.19	0.900	M
16	31							76					0.020
	32						39	77	299	38.9	3.11	1.30	M
17	33							78					0.025
	34						40	79	305	40.1	2.81	1.10	0.025
18	35							80					0.060
	36						41	81	296	37.5	5.08	0.800	0.105
19	37							82					0.065
	38						42	83	255	33.5	3.19	0.450	0.170
20	39							84					0.175
	40						43	85	206	31.8	4.32	0.600	0.185
21	41							86					0.125
	42						44	87	186	27.2	2.86	0.540	0.060
22	43							88					0.055
	44						45	89	156	20.1	0.960	0.470	0.065
23	45							90					0.065

Table 5.2 (Continued)

DATE 1 August 1956
TIME 1300 - 1310 CST

CONCENTRATION (mg m^{-3})

RUN NO. 25

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	170	14.8	1.15	0.425	M		136					
	92					0.045	69	137	9.95	1.62	0.040		
47	93	156	15.6	1.56	M	0.055		138					
	94					0.065	70	139	0.660				
48	95	161	17.3	2.29	0.275	0.065		140					
	96					0.075	71	141	0.135				
49	97	102	20.3	0.645	0.395	0.115		142					
	98					0.080	72	143	0.025				
50	99	116	27.3	3.55	0.485	0.105		144					
	100					0.105	73	145					
51	101	112	29.9	5.16	0.755	0.200		146					
	102					0.145	74	147					
52	103	91.7	24.8	8.14	0.685	0.220		148					
	104					0.040	75	149					
53	105	91.5	22.5	7.34	0.595	0.225		150					
	106					0.235	76	151					
54	107	85.5	18.0	3.11	0.685	0.230		152					
	108					0.040	77	153					
55	109	92.1	13.7	3.74	M	0.165		154					
	110					0.095	78	155					
56	111	85.2	13.7	0.855	0.815	0.035		156					
	112						79	157					
57	113	74.7	11.9	0.735	0.715	0.045		158					
	114					0.050	80	159					
58	115	53.4	14.9	0.715	1.11			160					
	116						81	161					
59	117	73.5	12.9	2.42	1.16			162					
	118						82	163					
60	119	80.4	13.3	3.02	1.19			164					
	120						83	165					
61	121	80.7	17.3	3.92	0.805			166					
	122						84	167					
62	123	119	26.4	3.69	0.675			168					
	124						85	169					
63	125	148	26.4	5.41	0.370			170					
	126						86	171					
64	127	105	28.8	4.87	0.300			172					
	128						87	173					
65	129	66.9	16.7	6.42	0.340			174					
	130						88	175					
66	131	34.1	19.2	5.99	0.465			176					
	132						89	177					
67	133	8.19	18.5	0.515	0.155			178					
	134						90	179					
68	135	23.9	5.80	0.320				180					
							91	181					

Table 5.2 (Continued)

DATE 2 August 1956
TIME 1200-1210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 26

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63	0.030				
10	19							64					
	20						33	65	1.62				
11	21							66					
	22						34	67	2.69				
12	23							68					
	24						35	69	8.09				
13	25							70					
	26						36	71	17.0	0.510			
14	27							72					
	28						37	73	34.7	5.84	0.080		
15	29							74					
	30						38	75	46.5	13.8	0.560		
16	31							76					
	32						39	77	59.1	17.1	1.22	0.025	
17	33							78					
	34						40	79	73.8	21.8	1.53	0.055	
18	35							80					
	36						41	81	79.4	22.8	3.23	0.305	
19	37							82					
	38						42	83	93.2	23.7	6.62	0.490	0.035
20	39							84					0.075
	40						43	85	127	28.5	6.92	1.26	0.145
21	41							86					0.145
	42						44	87	133	35.9	7.52	2.16	0.190
22	43							88					0.280
	44						45	89	121	33.5	9.60	2.18	0.440
23	45							90					0.540

Table 5.2 (Continued)

DATE 2 August 1956
TIME 1200-1210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 26

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	123	37.4	10.1	2.18	0.365		136					
	92					0.385	69	137					
47	93	121	38.4	10.3	2.07	0.340		138					
	94					0.325	70	139					
48	95	114	36.3	11.6	2.48	0.280		140					
	96					0.280	71	141					
49	97	126	41.6	12.2	2.54	0.285		142					
	98					0.310	72	143					
50	99	139	48.5	12.9	2.75	0.335		144					
	100					0.445	73	145					
51	101	144	47.1	11.8	1.92	0.465		146					
	102					0.360	74	147					
52	103	158	42.6	10.6	1.59	0.260		148					
	104					0.265	75	149					
53	105	148	39.5	9.90	0.925	0.300		150					
	106					0.360	76	151					
54	107	121	33.6	6.92	1.23	0.310		152					
	108					0.370	77	153					
55	109	96.8	25.8	5.68	1.47	0.355		154					
	110					0.355	78	155					
56	111	70.1	18.6	4.28	1.60	0.415		156					
	112					0.320	79	157					
57	113	50.4	13.1	4.13	1.13	0.183		158					
	114					0.150	80	159					
58	115	34.7	7.13	2.57	0.745	0.085		160					
	116					0.055	81	161					
59	117	24.6	6.12	0.990	0.255			162					
	118						82	163					
60	119	21.5	6.21	1.22	0.240			164					
	120						83	105					
61	121	16.4	6.03	1.56	0.155			166					
	122						84	167					
62	123	11.8	5.15	1.56	0.235			168					
	124						85	169					
63	125	7.17	3.39	1.29	0.190			170					
	126						86	171					
64	127	5.57	3.18	1.34	0.130			172					
	128						87	173					
65	129	3.90	1.97	0.980	0.050			174					
	130						88	175					
66	131	1.49	0.910	0.590				176					
	132						89	177					
67	133	0.190	0.245	0.125				178					
	134						90	179					
68	135			0.030				180					
							91	181					

DATE 2 August 1956
TIME 1400-1410 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.27

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61	0.030				
9	17							62					
	18						32	63	0.540				
10	19							64					
	20						33	65	1.79	0.240			
11	21							66					
	22						34	67	7.08	1.64	0.205		
12	23							68					
	24						35	69	12.2	4.01	0.690		
13	25							70					
	26						36	71	18.8	6.57	2.57	0.080	
14	27							72					0.050
	28						37	73	24.5	10.1	4.29	0.890	0.060
15	29							74					0.130
	30						38	75	40.2	14.4	3.78	0.990	0.165
16	31							76					0.170
	32						39	77	59.1	17.4	4.56	1.07	0.185
17	33							78					0.255
	34						40	79	93.9	19.8	6.23	1.23	0.390
18	35							80					0.590
	36						41	81	133	32.1	7.81	2.48	0.710
19	37							82					0.800
	38						42	83	159	49.1	12.4	3.73	0.840
20	39							84					0.870
	40						43	85	200	60.0	17.7	4.73	0.980
21	41							86					0.930
	42						44	87	221	73.1	19.7	4.17	0.940
22	43							88					0.750
	44						45	89	221	57.3	17.8	3.66	0.670
23	45							90					0.520

DATE 2 August 1956
TIME 1400-1410 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.27

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	188	45.3	13.7	2.33	0.405		136					
	92					0.505	69	137					
47	93	164	41.4	9.77	2.36	0.355		138					
	94					0.350	70	139					
48	95	164	49.8	11.7	2.40	0.355		140					
	96					0.355	71	141					
49	97	150	50.1	14.2	2.39	0.330		142					
	98					0.225	72	143					
50	99	132	44.6	13.1	1.56	0.185		144					
	100					0.165	73	145					
51	101	132	36.2	9.37	1.00	0.145		146					
	102					0.120	74	147					
52	103	141	36.3	5.06	0.355	0.100		148					
	104					0.060	75	149					
53	105	123	23.0	3.86	0.050	0.050		150					
	106					0.025	76	151					
54	107	101	19.2	1.69				152					
	108						77	153					
55	109	63.3	10.8	0.535				154					
	110						78	155					
56	111	34.4	5.49	0.025				156					
	112						79	157					
57	113	22.1	1.55					158					
	114						80	159					
58	115	7.86	0.415					160					
	116						81	161					
59	117	3.27						162					
	118						82	163					
60	119	0.940						164					
	120						83	165					
61	121	0.210						166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 3 August 1956
TIME 0000-0010 CST

CONCENTRATION (mg m^{-3})

RUN NO.28

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65	0.070				
11	21							66					
	22						34	67	0.120				
12	23							68					
	24						35	69	12.0	0.370			
13	25							70					
	26						36	71	42.5	5.81	0.065		
14	27							72					
	28						37	73	100	20.4	1.03	0.045	
15	29							74					
	30						38	75	152	45.6	8.24	0.120	
16	31							76					
	32						39	77	218	79.8	22.4	2.28	
17	33							78					0.065
	34						40	79	299	115	33.9	10.4	0.370
18	35							80					2.35
	36						41	81	378	156	42.8	18.2	6.79
19	37							82					10.1
	38						42	83	488	192	57.9	21.1	8.65
20	39							84					6.87
	40						43	85	450	179	59.5	19.0	4.72
21	41							86					2.57
	42						44	87	408	144	46.9	13.5	0.925
22	43							88					0.250
	44						45	89	326	98.3	24.3	4.93	0.065
23	45							90					0.030

Table 5.2 (Continued)

DATE 3 August 1956
TIME 0000-0010 CST

CONCENTRATION (mg m^{-3})

RUN NO. 28

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	209	52.2	13.9	0.755			136					
	92						69	137					
47	93	107	17.4	4.82	0.020			138					
	94						70	139					
48	95	50.7	5.75	0.490	0.020			140					
	96						71	141					
49	97	21.3	1.10	0.030				142					
	98						72	143					
50	99	5.91	0.115					144					
	100						73	145					
51	101	0.610						146					
	102						74	147					
52	103							148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 3 AUGUST 1956
TIME 0200 - 0210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 29

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91							136					1.06
	92						69	137	115	43.5	15.4	4.18	0.970
47	93							138					1.41
	94						70	139	101	46.8	16.7	5.97	1.80
48	95	0.025						140					1.44
	96						71	141	81.0	30.8	8.31	3.09	1.23
49	97	0.020						142					0.880
	98						72	143	38.1	11.1	2.93	0.715	0.435
50	99	0.070						144					0.150
	100						73	145	15.6	3.47	0.735	0.125	0.035
51	101	0.170						146					0.010
	102						74	147	4.13	0.845	0.180	0.055	
52	103	0.790						148					
	104						75	149	0.920	0.305	0.115	0.025	
53	105	2.43	0.025					150					
	106						76	151	0.380	0.135	0.055		
54	107	6.93	0.205					152					
	108						77	153	0.185	0.055	0.015		
55	109	16.7	1.23	0.015				154					
	110						78	155	0.100				
56	111	44.6	6.32	0.370				156					
	112						79	157	0.040				
57	113	91.5	16.5	1.94	0.180			158					
	114					0.025	80	159					
58	115	127	35.7	8.63	1.27	0.085		160					
	116					0.230	81	161					
59	117	167	63.0	19.9	5.45	0.745		162					
	118					1.40	82	163					
60	119	234	79.5	27.6	9.18	2.18		164					
	120					2.60	83	165					
61	121	234	87.8	24.2	7.37	2.48		166					
	122					1.78	84	167					
62	123	248	74.9	21.8	5.66	1.54		168					
	124					1.24	85	169					
63	125	191	71.1	21.9	7.62	1.56		170					
	126					1.82	86	171					
64	127	186	51.5	13.3	4.48	1.78		172					
	128					1.60	87	173					
65	129	152	41.7	12.6	2.90	1.10		174					
	130					0.905	88	175					
66	131	146	45.6	12.6	3.24	0.795		176					
	132					0.625	89	177					
67	133	128	40.5	11.2	3.55	0.795		178					
	134					0.835	90	179					
68	135	112	35.6	10.6	2.65	0.835		180					
							91	181					

Table 6.2 (Continued)

DATE 3 August 1956
TIME 1300-1310 CST

CONCENTRATION (mg m^{-3})

RUN NO.30

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67	0.250				
12	23							68					
	24						35	69	1.79				
13	25							70					
	26						36	71	3.68				
14	27							72					
	28						37	73	6.29				
15	29							74					
	30						38	75	9.72				
16	31							76					
	32						39	77	12.6	1.92			
17	33							78					
	34						40	79	17.6	0.675			
18	35							80					
	36						41	81	26.0	1.68			
19	37							82					
	38						42	83	38.3	5.52	0.870		
20	39							84					
	40						43	85	50.9	17.1	2.83		
21	41							86					
	42						44	87	70.8	20.7	3.77	0.740	
22	43							88					
	44						45	89	88.4	26.9	5.19	1.19	
23	45							90					0.430

Table 5.2 (Continued)

DATE 3 August 1956
TIME 1300-1310 CST

CONCENTRATION (mg m^{-3})

RUN NO.30

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	91.7	25.8	5.12	1.27	0.500		136					
	92					0.210	69	137					
47	93	98.0	28.2	7.60	1.01	0.180		138					
	94					0.190	70	139					
48	95	100	29.3	6.61	0.880	0.190		140					
	96					0.160	71	141					
49	97	115	27.8	8.59	1.29	0.020		142					
	98					0	72	143					
50	99	141	32.9	9.49	2.21	0.020		144					
	100					0.250	73	145					
51	101	141	41.0	9.49	2.23	0.280		146					
	102					0.360	74	147					
52	103	146	52.2	12.5	2.99	0.440		148					
	104					0.320	75	149					
53	105	203	66.2	17.5	2.57	0.380		150					
	106					0.690	76	151					
54	107	221	67.8	17.0	3.02	0.620		152					
	108					0.600	77	153					
55	109	203	54.[illegible]	15.0	2.36	0.630		154					
	110					0.660	78	155					
56	111	177	51.2	12.0	2.68	0.440		156					
	112					0.150	79	157					
57	113	150	41.1	10.1	1.91	0.250		158					
	114					0.200	80	159					
58	115	125	34.8	8.89	1.36			160					
	116						81	161					
59	117	94.2	25.1	5.61	0.680			162					
	118						82	163					
60	119	71.6	17.1	2.12	0.610			164					
	120						83	165					
61	121	39.3	9.48	1.36	0.470			166					
	122						84	167					
62	123	35.7	6.32	2.42	0.640			168					
	124						85	169					
63	125	21.3	5.46	2.08	0.460			170					
	126						86	171					
64	127	18.8	5.12	1.73				172					
	128						87	173					
65	129	11.8	2.31					174					
	130						88	175					
66	131	4.56	0.735					176					
	132						89	177					
67	133	1.64						178					
	134						90	179					
68	135	0.660						180					
							91	181					

Table 5.2 (Continued)

DATE 3 AUGUST 1956
TIME 1500 - 1510 CST

CONCENTRATION (mg m^{-3})

RUN NO. 31

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91							136					0.590
	92						69	137	158	51.3	14.5	3.02	0.710
47	93							138					0.780
	94						70	139	170	56.3	17.5	3.81	1.03
48	95							140					1.62
	96						71	141	177	59.0	14.8	4.04	1.67
49	97							142					1.46
	98						72	143	135	44.3	15.4	4.41	1.30
50	99							144					1.23
	100						73	145	85.7	33.5	14.0	3.62	1.23
51	101							146					0.760
	102						74	147	54.9	22.4	7.15	1.60	0.190
52	103							148					0.230
	104						75	149	37.8	11.8	2.97	0.910	0.310
53	105	0.405	0.375					150					
	106						76	151	22.1	5.37	1.63	0.290	
54	107	1.58	0.765					152					
	108						77	153	11.4	3.80	0.900		
55	109	2.15	1.82	0.560				154					
	110						78	155	4.37	2.46			
56	111	11.7	3.59	1.75	0.610	0.550		156					
	112					1.06	79	157	4.02	0.960			
57	113	24.2	7.26	3.44	0.880	0.310		158					
	114					0.090	80	159	1.89	0.225			
58	115	39.2	12.6	4.17	1.42	0.830		160					
	116					0.800	81	161	0.735				
59	117	55.8	17.3	5.42	1.48	1.40		162					
	118					0.600	82	163					
60	119	85.1	22.7	6.87	2.05	0.400		164					
	120					0.780	83	165					
61	121	124	31.2	9.81	2.69	0.620		166					
	122					0.690	84	167					
62	123	155	41.1	11.0	3.35	0.320		168					
	124					0.710	85	169					
63	125	137	37.2	9.11	2.15	0.940		170					
	126					0.790	86	171					
64	127	129	34.4	8.31	1.18	0.950		172					
	128					0.380	87	173					
65	129	116	37.2	8.31	0.890	0.660		174					
	130					0.160	88	175					
66	131	135	36.6	7.81	1.00	0.660		176					
	132					0.660	89	177					
67	133	152	33.6	7.33	1.36	0.720		178					
	134					0.740	90	179					
68	135	165	40.1	10.3	2.79	0.850		180					
							91	181					

Table 5.2 (Continued)

DATE 6 August 1956
TIME 2000-2010 CST

CONCENTRATION (mg m^{-3})

RUN NO. 32

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63	0.085				
10	19							64					
	20						33	65	0.090				
11	21							66					
	22						34	67	0.565				
12	23							68					
	24						35	69	3.12	0.075			
13	25							70					
	26						36	71	7.22	0.660			
14	27							72					
	28						37	73	32.1	6.39			
15	29							74					
	30						38	75	78.5	31.5	0.750		
16	31							76					
	32						39	77	207	57.3	14.5	0.395	
17	33							78					0.015
	34						40	79	356	162	53.1	7.17	0.115
18	35							80					1.66
	36						41	81	615	434	129	46.8	6.18
19	37							82					19.7
	38						42	83	729	624	285	121	41.1
20	39							84					58.6
	40						43	85	707	518	205	60.3	31.3
21	41							86					5.20
	42						44	87	608	240	45.2	3.98	0.270
22	43							88					0.030
	44						45	89	369	58.8	1.83	0.045	0.010
23	45							90					0.015

Table 5.2 (Continued)

DATE 6 August 1956
TIME 2000 - 2010 CST

CONCENTRATION (mg m^{-3})

RUN NO. 32

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	132	6.35	0.015				136					
	92						69	137					
47	93	44.9	0.435	0.010				138					
	94						70	139					
48	95	8.55	0.050	0.010				140					
	96						71	141					
49	97	0.850						142					
	98						72	143					
50	99	0.080						144					
	100						73	145					
51	101							146					
	102						74	147					
52	103							148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 7 August 1956
TIME 1300-1310 CST

CONCENTRATION (mg m^{-3})

RUN NO. 33

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m		100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65	0.790				
11	21							66					
	22						34	67	2.33	0.070			
12	23							68					
	24						35	69	4.78	0.820	0.090		
13	25							70					
	26						36	71	12.0	2.88	0.240		
14	27							72					
	28						37	73	27.8	5.90	0.935		
15	29							74					
	30						38	75	40.4	11.1	1.86	0.175	
16	31							76					
	32						39	77	51.3	18.9	4.20	0.465	
17	33							78					
	34						40	79	55.7	21.6	5.94	0.925	0.030
18	35							80					0.080
	36						41	81	60.8	17.7	4.23	1.13	0.085
19	37							82					0.100
	38						42	83	59.9	15.6	3.76	0.675	0.145
20	39							84					0.125
	40						43	85	57.2	17.6	4.01	0.725	0.140
21	41							86					0.160
	42						44	87	71.3	21.5	4.62	1.02	0.195
22	43							88					0.335
	44						45	89	106	24.6	6.44	1.42	0.425
23	45							90					0.465

Table 5.2 (Continued)

DATE 7 August 1956
TIME 1300 - 1310 CST

CONCENTRATION (mg m^{-3})

RUN NO.33

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	138	48.3	7.67	2.28	0.590		136					
	92					0.640	69	137					
47	93	158	50.9	10.9	3.01	0.520		138					
	94					0.440	70	139					
48	95	191	59.1	16.6	2.62	0.420		140					
	96					0.710	71	141					
49	97	207	63.6	17.5	3.95	0.740		142					
	98					0.680	72	143					
50	99	180	62.7	19.1	3.59	0.660		144					
	100					0.560	73	145					
51	101	158	52.4	13.8	3.03	0.500		146					
	102					0.230	74	147					
52	103	128	40.2	7.93	1.23	0.070		148					
	104						75	149					
53	105	85.5	20.1	4.26	0.590			150					
	106						76	151					
54	107	49.2	9.77	1.38	0.080			152					
	108						77	153					
55	109	23.9	2.88	0.415				154					
	110						78	155					
56	111	7.95	0.880	0.045				156					
	112						79	157					
57	113	2.43	0.135					158					
	114						80	159					
58	115	0.485	0.025					160					
	116						81	161					
59	117	0.200						162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 7 August 1956
TIME 1500-1510 CST

CONCENTRATION (mg m^{-3})

RUN NO. 34

POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m	POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m
1	1							46					
	2						24	47	60.8	15.9	2.22	0.135	
2	3							48					
	4						25	49	99.6	24.9	6.95	0.625	0.045
3	5							50					0.080
	6						26	51	130	34.7	11.4	1.44	0.180
4	7							52					0.320
	8						27	53	152	45.5	14.4	3.28	0.570
5	9							54					0.700
	10						28	55	180	60.2	16.1	3.83	0.870
6	11							56					1.17
	12						29	57	201	68.7	18.3	4.48	1.06
7	13							58					1.18
	14						30	59	192	64.1	20.0	4.65	1.12
8	15							60					1.27
	16						31	61	162	59.7	18.6	5.10	1.30
9	17							62					1.04
	18						32	63	162	51.0	15.7	4.23	0.970
10	19							64					0.720
	20						33	65	130	40.5	11.9	2.61	0.390
11	21							66					0.100
	22						34	67	102	26.1	5.12	0.805	0.045
12	23							68					0.030
	24						35	69	70.2	13.3	1.42	0.155	0.015
13	25							70					
	26						36	71	46.1	5.99	0.250	0.040	
14	27							72					
	28						37	73	25.5	3.02	0.025	0.015	
15	29							74					
	30						38	75	11.5	0.595	0.020		
16	31							76					
	32						39	77	6.68	0.040	0.025		
17	33							78					
	34						40	79	3.69				
18	35	0.065						80					
	36						41	81	0.525				
19	37	0.380						82					
	38						42	83	0.070				
20	39	3.96						84					
	40						43	85	0.040				
21	41	12.7	0.495					86					
	42						44	87					
22	43	19.2	3.12	0.040				88					
	44						45	89					
23	45	33.3	6.54	0.700	0.015			90					

Table 5.2 (Continued)

DATE 7 August 1956
TIME 2303-2313 CST

CONCENTRATION (mg m^{-3})

RUN NO. 35-8

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					1.19
	2						24	47	339	133	45.0	12.5	2.94
2	3							48					4.35
	4						25	49	387	136	43.1	14.7	5.27
3	5							50					5.29
	6						26	51	366	130	35.2	11.7	4.17
4	7							52					2.76
	8						27	53	296	91.5	24.1	8.41	1.54
5	9							54					0.985
	10						28	55	185	52.1	13.6	3.15	0.520
6	11							56					
	12						29	57	99.6	24.8	3.53	0.610	
7	13							58					
	14						30	59	49.4	6.87	0.510	0.055	
8	15							60					
	16						31	61	20.9	0.580	0.055		
9	17							62					
	18						32	63	5.87	0.095	0.025		
10	19							64					
	20						33	65	0.705				
11	21							66					
	22						34	67	0.135				
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31	0.055						76					
	32						39	77					
17	33	0.415						78					
	34						40	79					
18	35	0.385						80					
	36						41	81					
19	37	3.53	0.190					82					
	38						42	83					
20	39	15.5	1.35	0.035				84					
	40						43	85					
21	41	58.7	8.64	0.600				86					
	42						44	87					
22	43	136	34.1	5.29	0.335			88					
	44					0.055	45	89					
23	45	231	81.6	24.1	4.41	0.265		90					

Table 5.2 (Continued)

DATE 11 August1956
TIME 2130-2140 CST

CONCENTRATION (mg m^{-3})

RUN NO. 35

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	182	6.81			
2	3							48					
	4						25	49	87.0	0.490			
3	5							50					
	6						26	51	24.2				
4	7							52					
	8						27	53	3.78				
5	9							54					
	10						28	55	0.440				
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23	0.225						68					
	24						35	69					
13	25	2.15	0.105			0.065		70					
	26					3.23	36	71					
14	27	14.3	2.07	1.59	0.435	13.8		72					
	28					10.2	37	73					
15	29	59.3	16.4	14.7	13.0	10.2		74					
	30					6.74	38	75					
16	31	168	61.4	45.8	32.8	5.77		76					
	32					7.41	39	77					
17	33	359	180	75.6	37.4	5.91		78					
	34					4.75	40	79					
18	35	312	228	145	41.9	3.52		80					
	36					3.21	41	81					
19	37	591	575	253	76.2	2.47		82					
	38					1.03	42	83					
20	39	641	575	200	50.5	0.225		84					
	40					0.130	43	85					
21	41	660	405	81.1	8.45	0.080		86					
	42						44	87					
22	43	552	198	14.8	0.420			88					
	44						45	89					
23	45	366	54.6	0.755				90					

Table 5.2 (Continued)

DATE 11 August1956
TIME 2330-2340 CST

CONCENTRATION (mg m^{-3})

RUN NO.36

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	0.090				
2	3							48					
	4						25	49	0.095				
3	5							50					
	6						26	51	0.105	0.035			
4	7							52					
	8						27	53	0.140	0.045			
5	9							54					
	10						28	55	0.135	0.085			
6	11							56					
	12						29	57	0.185	0.075			
7	13							58					
	14						30	59	2.95	0.130	0.040		
8	15							60					
	16						31	61	12.0	0.140	0.040		
9	17							62					
	18						32	63	83.5	2.19	0.025		
10	19							64					
	20						33	65	251	24.3	0.220		
11	21							66					
	22						34	67	492	161	6.51	0.055	
12	23							68					
	24						35	69	747	405	71.4	0.445	
13	25							70					0.045
	26						36	71	830	540	203	17.9	0.160
14	27							72					0.760
	28						37	73	794	431	152	64.6	2.63
15	29							74					6.85
	30						38	75	660	266	79.2	38.9	15.5
16	31							76					29.8
	32						39	77	423	130	59.2	31.3	38.6
17	33							78					21.9
	34						40	79	210	53.3	26.0	20.7	2.34
18	35							80					
	36						41	81	76.2	10.3	3.25	1.08	
19	37							82					
	38						42	83	21.9	0.580	0.054		
20	39							84					
	40						43	85	5.45				
21	41							86					
	42						44	87	1.74				
22	43							88					
	44						45	89					
23	45	0.075						90					

DATE 12 August 1956
TIME 0300-0310 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.37

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77	0.055				
17	33							78					
	34						40	79	0.795	0.025			
18	35							80					
	36						41	81	3.09	0.325			
19	37							82					
	38						42	83	11.8	1.53	0.040		
20	39							84					
	40						43	85	27.8	6.53	0.780	0.045	
21	41							86					
	42						44	87	53.0	17.6	4.53	0.860	0.050
22	43							88					0.230
	44						45	89	99.3	37.1	10.3	3.06	0.795
23	45							90					1.41

DATE 12 August 1956
TIME 0300-0310 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 37

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	173	55.8	16.4	5.54	1.94		136					
	92					1.98	69	137					
47	93	176	60.9	18.5	4.29	1.55		138					
	94					1.44	70	139					
48	95	224	78.0	18.9	5.40	1.34		140					
	96					1.46	71	141					
49	97	224	74.1	22.9	7.39	2.08		142					
	98					2.02	72	143					
50	99	170	57.6	18.5	4.61	1.62		144					
	100					0.975	73	145					
51	101	128	36.6	8.01	2.03	0.480		146					
	102					0.150	74	147					
52	103	68.9	15.5	3.31	0.520	0.025		148					
	104						75	149					
53	105	28.4	6.42	0.905	0.100			150					
	106						76	151					
54	107	15.5	1.56	0.085				152					
	108						77	153					
55	109	7.86	0.490	0.080				154					
	110						78	155					
56	111	3.53	0.130					156					
	112						79	157					
57	113	1.39	0.055					158					
	114						80	159					
58	115	0.055						160					
	116						81	161					
59	117	0.020						162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 12 August 1956
TIME 0500-0510 CST

CONCENTRATION (mg m^{-3})

RUN NO.38

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61	0.020				
9	17							62					
	18						32	63	0.350				
10	19							64					
	20						33	65	1.74				
11	21							66					
	22						34	67	5.48	0.210			
12	23							68					
	24						35	69	19.4	1.08	0.020		
13	25							70					
	26						36	71	54.6	5.00	0.270		
14	27							72					
	28						37	73	126	19.8	1.85	0.055	
15	29							74					
	30						38	75	219	57.6	11.5	1.36	0.075
16	31							76					0.520
	32						39	77	333	118	33.0	7.90	1.66
17	33							78					3.85
	34						40	79	380	153	51.4	18.7	6.01
18	35							80					6.44
	36						41	81	360	134	46.9	13.7	4.63
19	37							82					1.91
	38						42	83	273	87.3	17.4	3.44	0.580
20	39							84					0.085
	40						43	85	170	31.5	4.61	0.430	
21	41							86					
	42						44	87	84.3	7.55	0.980	0.050	
22	43							88					
	44						45	89	30.3	1.97	0.140	0.025	
23	45							90					

DATE 12 August 1956
TIME 0500-0510 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 38

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	2.64	0.300					136					
	92						69	137					
47	93	1.38	0.050					138					
	94						70	139					
48	95	0.210						140					
	96						71	141					
49	97	0.030						142					
	98						72	143					
50	99							144					
	100						73	145					
51	101							146					
	102						74	147					
52	103							148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 13 August 1956
TIME 2230-2240 CST

CONCENTRATION (mg m^{-3})

RUN NO. 39

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					M
	2						24	47	362	117	36.8	8.24	M
2	3							48					M
	4						25	49	470	140	42.7	17.0	M
3	5							50					3.70
	6						26	51	425	16[illegible]	54.2	20.1	2.16
4	7							52					1.56
	8						27	53	378	130	49.6	10.7	1.83
5	9							54					1.36
	10						28	55	249	79.7	20.6	3.43	0.835
6	11							56					M
	12						29	57	155	37.5	4.42	0.540	M
7	13							58					M
	14						30	59	92.2	13.1	1.95	0.080	
8	15							60					
	16						31	61	38.6	2.13	0.180		
9	17							62					
	18						32	63	11.6	0.310			
10	19							64					
	20						33	65	2.62	0.015			
11	21							66					
	22						34	67	0.445				
12	23							68					
	24						35	69	0.005				
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77					
17	33	0.225	0.040					78					
	34						40	79					
18	35	1.22	0.110					80					
	36						41	81					
19	37	7.83	0.340	0.050				82					
	38						42	83					
20	39	30.3	1.86	0.210	0.060			84					
	40					M	43	85					
21	41	91.8	11.1	0.350	0.075	M		86					
	42					M	44	87					
22	43	182	39.6	4.62	0.045	M		88					
	44					M	45	89					
23	45	276	98.4	23.8	1.38	M		90					

Table 5.2 (Continued)

DATE 14 August 1956.
TIME 0030-0040 CST

CONCENTRATION (mg m^{-3})

RUN NO. 40

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69	0.295				
13	25							70					
	26						36	71	0.640				
14	27							72					
	28						37	73	2.85	0.080			
15	29							74					
	30						38	75	11.6	0.455	0.025		
16	31							76					
	32						39	77	24.9	2.97	0.180	M	
17	33							78					
	34						40	79	64.8	14.2	2.33	M	
18	35							80					0.035
	36						41	81	156	42.2	11.5	M	0.260
19	37							82					0.735
	38						42	83	227	76.4	25.8	M	1.38
20	39							84					1.64
	40						43	85	318	105	27.9	M	1.72
21	41							86					1.57
	42						44	87	312	99.9	26.8	M	1.55
22	43							88					1.49
	44						45	89	281	77.1	24.3	M	1.56
23	45							90					1.38

Table 5.2 (Continued)

DATE 14 August 1956
TIME 0030-0040 CST

CONCENTRATION (mg m^{-3})

RUN NO.40

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	215	76.6	18.5	4.95	1.34		136					
	92					1.28	69	137					
47	93	201	53.7	17.7	3.73	1.36		138					
	94					1.15	70	139					
48	95	204	52.7	16.6	5.05	0.900		140					
	96					1.22	71	141					
49	97	168	55.8	14.5	4.80	1.36		142					
	98					1.62	72	143					
50	99	180	74.1	23.7	5.85	1.79		144					
	100					2.21	73	145					
51	101	185	76.4	32.7	14.6	3.33		146					
	102					5.99	74	147					
52	103	125	49.1	14.5	5.85	6.48		148					
	104					2.80	75	149					
53	105	68.3	16.1	2.15	0.375	0.465		150					
	106					0.045	76	151					
54	107	33.0	2.19	0.085				152					
	108						77	153					
55	109	10.7	0.195					154					
	110						78	155					
56	111	1.35						156					
	112						79	157					
57	113	0.150						158					
	114						80	159					
58	115	0.025						160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.3 (Continued)

DATE 14 AUGUST 1956
TIME 0300 - 0310 CST

CONCENTRATION (mg m^{-3})

RUN NO. 41

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91							136					
	92						69	137					
47	93							138					
	94						70	139					
48	95	0.260						140					
	96						71	141					
49	97	2.60	0.185					142					
	98						72	143					
50	99	22.7	1.92	0.125				144					
	100						73	145					
51	101	74.7	18.6	2.27	0.235			146					
	102					0.010	74	147					
52	103	198	59.7	17.6	4.32	0.240		148					
	104					1.34	75	149					
53	105	378	142	48.8	16.7	4.33		150					
	106					8.57	76	151					
54	107	450	189	67.8	25.0	9.92		152					
	108					6.43	77	153					
55	109	362	144	39.0	9.00	1.72		154					
	110					0.400	78	155					
56	111	236	64.7	9.81	0.675	0.055		156					
	112						79	157					
57	113	106	15.0	0.765				158					
	114						80	159					
58	115	33.6	2.10	0.035				160					
	116						81	161					
59	117	4.97	0.295					162					
	118						82	163					
60	119	0.270						164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 14 AUGUST 1956
TIME 0500 - 0510 CST

CONCENTRATION (mg m^{-3})

RUN NO. 42

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91							136					
	92						69	137	1.05	0.055			
47	93							138					
	94						70	139	0.075				
48	95							140					
	96						71	141					
49	97							142					
	98						72	143					
50	99							144					
	100						73	145					
51	101	0.580						146					
	102						74	147					
52	103	0.945						148					
	104						75	149					
53	105	2.61						150					
	106						76	151					
54	107	9.68	0.440					152					
	108						77	153					
55	109	21.0	2.88	0.075	0.005			154					
	110						78	155					
56	111	50.3	5.87	1.07	0.045			156					
	112						79	157					
57	113	106	25.2	5.24	1.07	0.070		158					
	114					0.280	80	159					
58	115	183	53.6	15.6	3.49	0.725		160					
	116					1.31	81	161					
59	117	242	83.9	25.3	7.12	1.70		162					
	118					2.13	82	163					
60	119	276	100	31.5	7.77	1.98		164					
	120					1.95	83	165					
61	121	254	84.8	23.4	5.59	2.11		166					
	122					2.11	84	167					
62	123	204	56.1	15.5	5.16	1.94		168					
	124					1.76	85	169					
63	125	127	41.3	12.6	4.17	1.36		170					
	126					0.815	86	171					
64	127	103	32.3	8.56	1.94	0.310		172					
	128					0.070	87	173					
65	129	76.2	17.1	2.76	0.455	0.020		174					
	130						88	175					
66	131	48.6	4.52	0.595	0.060			176					
	132						89	177					
67	133	19.7	1.23	0.090				178					
	134						90	179					
68	135	5.18	0.225					180					
							91	181					

Table 5.2 (Continued)

DATE 15 August 1956
TIME 1200-1210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 43

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					0.055
	2						24	47	2.43	0.240	0.025	0.275	0.080
2	3							48					0.125
	4						25	49	3.71	0.625	0.245	0.515	0.095
3	5							50					0.075
	6						26	51	10.4	1.91	0.965	0.615	0.085
4	7							52					0.100
	8						27	53	26.1	3.42	1.72	0.565	0.090
5	9							54					0.095
	10						28	55	38.7	5.30	1.80	0.575	0.105
6	11							56					0.090
	12						29	57	49.4	8.58	2.63	0.735	0.035
7	13							58					0.060
	14						30	59	64.5	21.3	3.79	0.825	0.085
8	15							60					0.075
	16						31	61	81.2	33.2	5.27	1.29	0.050
9	17							62					0.095
	18						32	63	111	36.6	7.65	1.02	0.165
10	19							64					0.145
	20						33	65	126	39.0	9.47	0.935	0.075
11	21							66					0.060
	22						34	67	114	26.4	6.31	0.735	0.090
12	23							68					0.065
	24						35	69	116	20.6	3.97	0.745	0.075
13	25							70					0.075
	26						36	71	123	23.3	5.13	0.625	0.070
14	27							72					0.080
	28						37	73	114	26.4	6.93	0.715	0.070
15	29							74					0.100
	30						38	75	137	40.4	7.09	1.47	0.120
16	31							76					0.135
	32						39	77	153	42.3	11.9	1.82	0.250
17	33							78					0.255
	34						40	79	189	46.5	14.7	2.40	0.305
18	35							80					0.450
	36						41	81	219	51.2	16.9	2.63	0.450
19	37							82					0.490
	38						42	83	249	58.2	14.0	2.45	0.540
20	39							84					0.490
	40						43	85	225	57.3	11.6	2.10	0.460
21	41					0.055		86					0.410
	42					0.060	44	87	200	48.8	10.5	2.07	0.330
22	43	0.025				0.070		88					0.275
	44					0.115	45	89	177	40.8	7.21	1.76	0.205
23	45	0.465			0.080	0.080		90					0.205

Table 5.2 (Continued)

DATE 15 August 1956
TIME 1200-1210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 43

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	135	30.9	6.81	1.36	0.220		136					
	92					0.240	69	137					
47	93	121	30.5	7.09	0.910	0.235		138					
	94					0.155	70	139					
48	95	114	19.5	5.55	0.710	0.155		140					
	96					0.125	71	141					
49	97	81.6	23.6	4.99	0.490	0.100		142					
	98					0.070	72	143					
50	99	66.0	18.6	3.12	0.325	0.050		144					
	100					0.015	73	145					
51	101	49.8	11.1	1.24	0.135	0.030		146					
	102						74	147					
52	103	31.5	6.83	0.125				148					
	104						75	149					
53	105	8.55	2.22	0.045				150					
	106						76	151					
54	107	4.77	0.520					152					
	108						77	153					
55	109	4.40	0.035					154					
	110						78	155					
56	111	1.77						156					
	112						79	157					
57	113	1.49						158					
	114						80	159					
58	115	0.045						160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 15 August 1956
TIME 1400-1410 CST

CONCENTRATION (mg m^{-3})

RUN NO.44

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	41.4	9.18	1.33	0.320	
2	3							48					
	4						25	49	36.0	7.85	1.03	0.405	
3	5							50					0.060
	6						26	51	35.1	6.30	1.84	0.300	0.080
4	7							52					0.080
	8						27	53	58.7	9.24	3.99	0.675	0.125
5	9							54					0.145
	10						28	55	98.5	21.3	5.47	1.25	0.125
6	11							56					0.240
	12						29	57	120	28.1	7.16	1.54	0.185
7	13							58					0.205
	14						30	59	153	36.3	6.67	1.30	0.220
8	15							60					0.240
	16						31	61	148	40.4	7.34	1.03	0.215
9	17							62					0.215
	18						32	63	150	42.9	12.2	1.23	0.200
10	19							64					0.130
	20						33	65	156	46.2	15.1	2.94	0.150
11	21							66					0.210
	22						34	67	143	45.9	13.2	2.77	0.385
12	23							68					0.505
	24						35	69	162	44.0	12.2	2.46	9.565
13	25	0.065						70					0.575
	26						36	71	162	44.6	9.87	2.60	0.545
14	27	1.56						72					0.575
	28						37	73	188	39.8	9.37	2.54	0.585
15	29	4.01	0.040					74					0.605
	30						38	75	191	49.8	10.9	3.12	0.465
16	31	5.48	0.375					76					0.455
	32						39	77	168	53.9	12.4	2.72	0.445
17	33	11.9	1.23	0.195				78					0.345
	34						40	79	135	39.5	9.87	1.96	0.310
18	35	16.1	4.16	1.18				80					0.290
	36						41	81	109	31.1	7.67	1.98	0.240
19	37	27.0	9.24	2.75	0.030			82					0.210
	38						42	83	89.0	18.9	6.17	1.77	0.165
20	39	32.0	15.2	2.55	0.125			84					0.135
	40						43	85	70.1	12.6	3.60	0.835	0.195
21	41	42.9	14.7	3.44	0.385			86					0.160
	42						44	87	69.3	10.5	1.81	0.555	0.150
22	43	48.8	15.3	5.24	0.265			88					0.170
	44						45	89	46.5	6.35	1.18	0.195	0.195
23	45	48.5	12.4	2.75	0.405			90					0.105

DATE 15 August 1956
TIME 1400-1410 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.44

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	23.6	2.78	0.355	0.060			136					
	92						69	137					
47	93	18.5	1.36	0.085	0.055			138					
	94						70	139					
48	95	8.43	0.500	0.070	0.030			140					
	96						71	141					
49	97	6.17	0.090					142					
	98						72	143					
50	99	2.87						144					
	100						73	145					
51	101	0.355						146					
	102						74	147					
52	103							148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

DATE 15 August 1956
TIME 1700-1710 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 45

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	0.065				
2	3							48					
	4						25	49	0.520				
3	5							50					
	6						26	51	3.08	0.040			
4	7							52					
	8						27	53	11.5	0.140			
5	9							54					
	10						28	55	27.8	0.790	0.085		
6	11							56					
	12						29	57	45.8	3.24	0.660		
7	13							58					
	14						30	59	71.7	11.3	1.04	0.075	
8	15							60					
	16						31	61	114	25.5	5.40	0.740	0.060
9	17							62					0.115
	18						32	63	168	48.9	11.6	3.98	0.295
10	19							64					0.695
	20						33	65	204	73.2	21.5	4.95	1.06
11	21							66					1.80
	22						34	67	246	86.9	28.6	7.12	2.50
12	23							68					2.94
	24						35	69	266	99.0	31.4	8.93	2.20
13	25							70					1.84
	26						36	71	291	98.6	29.8	7.24	1.43
14	27							72					1.82
	28						37	73	285	86.3	24.2	6.85	2.27
15	29							74					2.81
	30						38	75	297 *	99.3	28.6	8.37	2.29
16	31							76					1.90
	32						39	77	362	114	41.4	6.56	1.50
17	33							78					0.735
	34						40	79	288	105	28.1	3.39	0.330
18	35							80					0.125
	36						41	81	215	58.4	10.9	1.17	0.060
19	37							82					0.025
	38						42	83	150	32.7	3.97	0.420	0.010
20	39							84					
	40						43	85	105	18.0	1.45	0.075	
21	41							86					
	42						44	87	65.7	8.06	0.450		
22	43							88					
	44						45	89	34.2	1.47	0.025		
23	45	0.040						90					

Table 5.2 (Continued)

DATE 15 August 1958
TIME 1700-1710 CST

CONCENTRATION (mg m^{-3})

RUN NO.45

POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m	POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m
46	91	10.9	0.170					136					
	92						69	137					
47	93	1.88	0.035					138					
	94						70	139					
48	95	0.545						140					
	96						71	141					
49	97							142					
	98						72	143					
50	99							144					
	100						73	145					
51	101							146					
	102						74	147					
52	103							148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 15 August 1956
TIME 1845-1855 CST

CONCENTRATION (mg m^{-3})

RUN NO.46

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					1.01
	2						24	47	434	114	27.8	4.84	1.12
2	3							48					1.81
	4						25	49	363	111	32.8	8.48	2.62
3	5							50					3.08
	6						26	51	267	92.1	32.0	11.0	2.83
4	7							52					1.74
	8						27	53	206	72.5	22.1	6.63	0.895
5	9							54					0.445
	10						28	55	147	41.0	11.8	1.44	0.110
6	11							56					0.060
	12						29	57	99.0	28.4	4.29	0.235	0.015
7	13							58					
	14						30	59	54.5	17.1	0.480		
8	15							60					
	16						31	61	37.1	4.79			
9	17							62					
	18						32	63	18.9	0.265			
10	19							64					
	20						33	65	11.4	0.130			
11	21							66					
	22						34	67	1.88	0.040			
12	23							68					
	24						35	69	6.[illegible]	0.140			
13	25							70					
	26						36	71	0.160	0.155			
14	27	0.065	0.110	0.055				72					
	28						37	73					
15	29	0.535	0.125	0.055				74					
	30						38	75					
16	31	4.59	0.325	0.085				76					
	32						39	77					
17	33	16.4	2.09	0.420	0.050			78					
	34						40	79					
18	35	59.3	13.5	3.53	0.715	0.095		80					
	36					0.445	41	81					
19	37	177	58.8	17.6	3.95	1.10		82					
	38					3.22	42	83					
20	39	384	131	53.1	15.0	6.08		84					
	40					6.33	43	85					
21	41	512	198	60.8	20.9	3.63		86					
	42					3.11	44	87					
22	43	564	188	47.8	12.6	4.01		88					
	44					3.06	45	89					
23	45	546	142	33.3	9.79	1.86		90					

Table 5.2 (Continued)

DATE 20 AUGUST 1956
TIME 1000 - 1010 CST

CONCENTRATION (mg m^{-3})

RUN NO. 47

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91							136					
	92						69	137	49.2	6.32	1.49	0.405	0.035
47	93							138					0.040
	94						70	139	68.1	7.22	1.29	0.515	0.075
48	95							140					0.090
	96						71	141	67.5	11.3	2.09	0.445	0.095
49	97							142					0.110
	98						72	143	92.7	18.0	2.69	0.625	0.105
50	99							144					0.100
	100						73	145	139	24.8	3.72	0.745	0.100
51	101							146					0.110
	102						74	147	182	35.4	3.67	0.685	0.140
52	103							148					0.200
	104						75	149	213	47.6	6.46	1.06	0.240
53	105							150					0.205
	106						76	151	218	42.6	9.49	1.38	0.205
54	107							152					0.180
	108						77	153	224	42.8	7.33	1.29	0.180
55	109							154					0.165
	110						78	155	260	42.3	6.02	2.00	0.175
56	111							156					0.125
	112						79	157	263	47.6	5.51	1.36	0.110
57	113							158					0.145
	114						80	159	278	47.4	7.70	1.42	0.165
58	115							160					0.165
	116						81	161	293	45.8	7.09	1.12	0.105
59	117							162					0.085
	118						82	163	284	53.3	6.65	0.975	0.100
60	119							164					0.125
	120						83	165	221	45.5	7.84	1.02	0.120
61	121	0.480						166					0.145
	122						84	167	192	41.6	8.33	0.955	0.085
62	123	2.18						168					0.055
	124						85	169	158	41.7	7.40	1.38	0.080
63	125	4.61	0.080					170					0.065
	126						86	171	122	39.0	9.39	0.845	
64	127	9.56	1.20	0.040				172					
	128						87	173	85.2	26.0	5.86	0.695	
65	129	19.7	6.32	0.625				174					
	130						88	175	42.3	15.6	4.10	0.565	
66	131	25.7	6.00	0.415	0.135			176					
	132						89	177	37.1	10.2	3.34	0.415	
67	133	33.5	4.92	0.735	0.155			178					
	134						90	179	22.2	7.46	2.54	0.435	
68	135	37.1	5.61	0.795	0.225			180					
							91	181	21.3	4.43	1.32	0.470	

Table 5.2 (Continued)

DATE 20 August 1956
TIME 1233-1243 CST

CONCENTRATION (mg m^{-3})

RUN NO. 48-S

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	1.92				
2	3							48					
	4						25	49	1.85				
3	5							50					
	6						26	51	1.83				
4	7							52					
	8						27	53	3.03				
5	9							54					
	10						28	55	4.89				
6	11							56					
	12						29	57	4.74				
7	13							58					
	14						30	59	5.51				
8	15							60					
	16						31	61	5.97				
9	17							62					
	18						32	63	13.3	0.040			
10	19							64					
	20						33	65	19.2	0.130			
11	21							66					
	22						34	67	26.9	0.620			
12	23							68					
	24						35	69	27.3	1.01			
13	25							70					
	26						36	71	31.5	3.66			
14	27							72					
	28						37	73	35.3	4.35			
15	29							74					
	30						38	75	39.6	4.88			
16	31	0.045						76					
	32						39	77	51.8	8.52			
17	33	0.070						78					
	34						40	79	49.5	10.1	0.150		
18	35	0.155						80					
	36						41	81	57.0	10.3	0.255		
19	37	0.245						82					
	38						42	83	55.2	12.8	0.260		
20	39	0.355						84					
	40						43	85	74.7	9.38	0.455		
21	41	0.595						86					
	42						44	87	62.3	9.03	1.11		
22	43	1.15						88					
	44						45	89	57.0	8.40	1.12		
23	45	1.25						90					

Table 5.2 (Continued)

DATE 20 August 1956
TIME 1233-1243 CST

CONCENTRATION (mg m^{-3})

RUN NO.48-S

POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	71.0	5.60	0.695		
	92					
47	93	76.2	7.35	0.675		
	94					
48	95	58.8	4.98	0.645		
	96					
49	97	50.6	3.45	0.745		
	98					
50	99	47.3	4.40	0.945		
	100					
51	101	46.4	6.66	1.22		
	102					
52	103	39.2	7.91	0.945	0.020	
	104					
53	105	37.1	5.58	0.905	0.065	
	106					
54	107	39.5	5.72	0.905		
	108					
55	109	38.6	7.38	1.05	0.105	
	110					
56	111	42.8	7.98	0.865	0.190	
	112					
57	113	54.8	8.48	0.935	0.215	
	114					
58	115	80.6	9.41	1.44	0.235	
	116					
59	117	74.0	9.62	0.955	0.255	
	118					
60	119	66.2	8.16	1.07	0.050	
	120					
61	121	60.8	7.62	0.895	0.010	
	122					
62	123	74.0	6.66	1.29	0.025	
	124					
63	125	78.6	4.91	0.755	0.075	
	126					
64	127	89.9	8.16	0.915	0.275	
	128					
65	129	97.8	18.9	3.08	0.535	
	130					
66	131	101	22.8	2.23	0.365	
	132					
67	133	130	26.0	2.02	0.045	
	134					0.045
68	135	140	24.6	3.13	0.725	0.115

POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m
	136					0.070
69	137	143	40.4	6.61	1.18	0.185
	138					0.095
70	139	125	45.2	11.6	2.12	0.140
	140					0.145
71	141	115	36.0	8.93	1.31	0.180
	142					0.140
72	143	85.4	29.3	9.83	1.27	0.120
	144					0.060
73	145	78.6	22.5	5.11	1.16	0.045
	146					0.090
74	147	57.0	14.4	2.52	0.745	0.040
	148					0.035
75	149	39.6	15.0	3.23	0.525	
	150					
76	151	45.2	16.2	2.64	0.340	
	152					
77	153	42.8	9.56	1.80	0.130	
	154					
78	155	33.5	6.45	2.42		
	156					
79	157	16.8	7.13	0.695		
	158					
80	159	17.6	3.27	0.185		
	160					
81	161	19.5	1.39	0.030		
	162					
82	163	10.2	0.355			
	164					
83	165	1.21				
	166					
84	167	0.150				
	168					
85	169	0.065				
	170					
86	171	0.055				
	172					
87	173	0.040				
	174					
88	175					
	176					
89	177					
	178					
90	179					
	180					
91	181					

Table 5.2 (Continued)

DATE 21 AUGUST 1956
TIME 0900 - 0910 CST

CONCENTRATION (mg m^{-3})

RUN NO. 48

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91							136					
	92						69	137	41.4	8.79	1.11	0.020	
47	93							138					
	94						70	139	26.2	3.06	0.066		
48	95	0.030						140					
	96						71	141	17.6	0.730	0.025		
49	97	0.545						142					
	98						72	143	7.58	0.065			
50	99	2.40						144					
	100						73	145	1.52				
51	101	6.29	0.065					146					
	102						74	147	0.215				
52	103	12.3	0.480					148					
	104						75	149	0.010				
53	105	20.0	3.20					150					
	106						76	151					
54	107	29.4	5.13	0.085				152					
	108						77	153					
55	109	36.9	6.15	0.700	0.020			154					
	110						78	155					
56	111	40.7	7.25	1.20	0.110	0.040		156					
	112					0.055	79	157					
57	113	53.9	13.8	1.82	0.400	0.115		158					
	114					0.200	80	159					
58	115	83.0	21.8	4.71	0.950	0.285		160					
	116					0.325	81	161					
59	117	97.5	31.7	8.12	1.54	0.395		162					
	118					0.390	82	163					
60	119	155	39.3	10.5	2.07	0.410		164					
	120					0.460	83	165					
61	121	130	48.0	14.1	3.05	0.640		166					
	122					0.760	84	167					
62	123	186	56.6	17.1	3.45	0.960		168					
	124					1.01	85	169					
63	125	209	65.0	17.0	3.64	0.990		170					
	126					1.24	86	171					
64	127	127	65.6	15.5	4.66	1.31		172					
	128					0.970	87	173					
65	129	224	59.7	13.8	4.68	0.630		174					
	130					0.345	88	175					
66	131	158	39.9	11.6	3.32	0.135		176					
	132					0.025	89	177					
67	133	105	26.3	8.81	0.990			178					
	134						90	179					
68	135	62.1	18.0	3.54	0.085			180					
							91	181					

Table 6.2 (Continued)

DATE 21 August 1956
TIME 1100-1110 CST

CONCENTRATION (mg m^{-3})

RUN NO.49

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71	0.110				
14	27							72					
	28						37	73	0.175				
15	29							74					
	30						38	75	0.430				
16	31							76					
	32						39	77	4.19	0.265			
17	33							78					
	34						40	79	7.10	1.14			
18	35							80					
	36						41	81	9.99	2.78	0.215		
19	37							82					
	38						42	83	8.72	3.53	1.75	0.040	
20	39							84					
	40						43	85	10.5	4.80	1.85	0.620	
21	41							86					
	42						44	87	29.9	9.45	2.31	0.850	0.070
22	43							88					0.145
	44						45	89	40.5	12.4	3.03	1.35	0.100
23	45							90					0.125

DATE 21 August 1956

TIME 1100-1110 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 49

POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m	POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m
46	91	67.1	17.9	5.15	1.15	0.065		136					
	92					0.075	69	137	0.605				
47	93	54.0	18.8	4.48	0.755	0.110		138					
	94					0.115	70	139					
48	95	68.7	21.2	3.99	0.285	0.080		140					
	96					0.095	71	141					
49	97	101	21.5	3.92	0.505	0.115		142					
	98					0.085	72	143					
50	99	128	26.0	5.08	0.945	0.155		144					
	100					0.175	73	145					
51	101	140	35.1	8.35	1.83	0.270		146					
	102					0.275	74	147					
52	103	155	38.6	10.5	2.28	0.415		148					
	104					0.535	75	149					
53	105	164	44.3	10.8	2.55	0.515		150					
	106					0.545	76	151					
54	107	173	57.3	11.8	2.21	0.525		152					
	108					0.585	77	153					
55	109	189	60.0	15.4	2.62	0.625		154					
	110					0.535	78	155					
56	111	201	66.8	15.0	3.00	0.465		156					
	112					0.525	79	157					
57	113	209	65.1	18.7	3.32	0.575		158					
	114					0.555	80	159					
58	115	200	57.3	15.8	2.48	0.455		160					
	116					0.535	81	161					
59	117	161	36.9	10.9	2.25	0.445		162					
	118					0.320	82	163					
60	119	121	34.2	9.38	1.46	0.300		164					
	120					0.300	83	165					
61	121	105	26.7	6.56	1.50	0.225		166					
	122					0.215	84	167					
62	123	71.7	18.6	3.37	1.09	0.205		168					
	124					0.135	85	169					
63	125	56.6	13.8	2.74	0.645	0.065		170					
	126					0.035	86	171					
64	127	37.7	9.33	2.84	0.360	0.035		172					
	128					0.035	87	173					
65	129	20.0	4.59	1.46	0.175	0.030		174					
	130						88	175					
66	131	9.42	0.970	0.565	0.075			176					
	132						89	177					
67	133	6.33	0.285	0.095				178					
	134						90	179					
68	135	2.90	0.075					180					
							91	181					

Table 5.2 (Continued)

DATE 21 AUGUST 1956
TIME 1400 - 1410 CST

CONCENTRATION (mg m^{-3})

RUN NO. 50

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91							136					0.440
	92						69	137	107	31.7	7.69	2.46	0.360
47	93	0.060						138					0.350
	94						70	139	73.1	20.0	3.45	1.04	0.300
48	95	0.580						140					0.190
	96						71	141	42.2	10.1	1.62	0.375	0.130
49	97	3.20						142					0.085
	98						72	143	27.0	5.31	0.680	0.045	0.045
50	99	14.2	0.075					144					
	100						73	145	24.8	1.20	0.055		
51	101	19.2	0.450	0.025				146					
	102						74	147	9.62	0.180			
52	103	17.1	2.00	0.140				148					
	104						75	149	4.32	0.150			
53	105	22.8	4.23	0.260	0.015			150					
	106						76	151	3.45	0.050			
54	107	25.4	7.52	0.370	0.050			152					
	108						77	153	2.43				
55	109	45.5	9.72	1.95	0.040			154					
	110					0.045	78	155	0.790				
56	111	66.0	15.9	3.45	0.190	0.075		156					
	112					0.080	79	157	0.345				
57	113	88.5	25.7	4.76	1.12	0.195		158					
	114					0.280	80	159	0.050				
58	115	112	30.9	7.12	1.94	0.280		160					
	116					0.285	81	161					
59	117	136	32.7	8.55	1.92	0.255		162					
	118					0.215	82	163					
60	119	158	42.8	7.98	1.82	0.190		164					
	120					0.160	83	165					
61	121	159	46.1	7.46	1.37	0.145		166					
	122					0.150	84	167					
62	123	165	42.8	M	1.65	0.150		168					
	124					0.160	85	169					
63	125	201	47.0	7.56	1.88	0.180		170					
	126					0.255	86	171					
64	127	231	51.2	9.76	2.30	0.370		172					
	128					0.340	87	173					
65	129	243	64.7	14.3	2.12	0.310		174					
	130					0.390	88	175					
66	131	237	77.0	18.3	2.74	0.430		176					
	132					0.490	89	177					
67	133	227	72.5	15.0	3.03	0.450		178					
	134					0.600	90	179					
68	135	192	55.2	14.3	3.83	0.470		180					
							91	181					

Table 5.2 (Continued)

DATE 21 AUGUST 1956

TIME 1530 - 1540 CST

CONCENTRATION (mg m^{-3})

RUN NO. 51

POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m
46	91					
	92					
47	93					
	94					
48	95	0.025				
	96					
49	97	0.040				
	98					
50	99	0.060				
	100					
51	101	0.085				
	102					
52	103	0.095				
	104					
53	105	0.065				
	106					
54	107	0.090				
	108					
55	109	0.105				
	110					
56	111	0.155				
	112					
57	113	0.205				
	114					
58	115	1.14				
	116					
59	117	2.61				
	118					
60	119	3.48				
	120					
61	121	4.28				
	122					
62	123	5.48	0.110			
	124					
63	125	8.19	1.74			
	126					
64	127	11.7	3.54			
	128					
65	129	17.0	4.01	0.155		
	130					
66	131	36.3	3.69	1.14	0.010	
	132					
67	133	64.6	7.07	1.08	0.205	
	134					
68	135	91.1	16.8	1.65	0.400	

POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m
	136					0.045
69	137	80.6	25.5	1.98	0.520	0.135
	138					0.135
70	139	84.9	30.8	4.70	0.760	0.230
	140					0.225
71	141	80.3	22.2	5.45	1.13	0.185
	142					0.160
72	143	60.6	14.8	4.60	1.03	0.145
	144					0.210
73	145	71.6	14.2	3.97	0.860	0.210
	146					0.135
74	147	99.3	17.1	4.68	1.21	0.155
	148					0.210
75	149	150	27.3	5.81	1.80	0.300
	150					0.315
76	151	201	47.3	9.33	2.47	0.410
	152					0.450
77	153	227	68.7	12.7	3.12	0.430
	154					0.410
78	155	246	71.0	18.4	2.72	0.285
	156					0.235
79	157	267	68.1	18.6	2.97	0.240
	158					0.185
80	159	219	70.2	15.3	2.10	0.230
	160					0.290
81	161	191	55.7	10.6	1.43	0.320
	162					0.155
82	163	155	39.5	6.33	1.66	0.120
	164					0.095
83	165	119	34.7	9.33	2.81	0.035
	166					
84	167	97.2	34.1	8.40	1.53	
	168					
85	169	75.3	23.3	5.35	0.730	
	170					
86	171	62.7	14.6	3.29	0.045	
	172					
87	173	38.0	9.39	2.16		
	174					
88	175	27.0	6.09	0.650		
	176					
89	177	14.4	4.98	0.089		
	178					
90	179	9.39	3.02			
	180					
91	181	8.61	0.450			

Table 5.2 (Continued)

DATE 24 August 1956
TIME 1117-1127 CST

CONCENTRATION (mg m^{-3})

RUN NO. 52

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1	21.2	5.24	0.135				46					0.015
	2						24	47	104	18.3	2.45	0.570	0.040
2	3	27.3	12.7	0.480				48					0.050
	4						25	49	112	21.2	2.39	0.350	0.040
3	5	32.0	12.2	1.25				50					0.035
	6						26	51	94.1	24.5	3.27	0.200	0.040
4	7	41.1	12.0	1.59				52					0.040
	8						27	53	104	20.1	5.13	0.100	0.050
5	9	35.3	9.68	1.90				54					0.040
	10						28	55	145	20.1	4.35	0.085	0.060
6	11	43.4	9.59	1.28				56					0.050
	12						29	57	176	30.3	3.92	0.380	
7	13	40.8	9.78	1.63				58					
	14						30	59	168	29.0	2.68	0.360	
8	15	42.6	10.5	1.72		0.060		60					0.010
	16					0.035	31	61	153	27.9	1.57	0.155	
9	17	45.0	11.7	1.88	0.055	0.030		62					0.035
	18					0.025	32	63	140	18.5	0.940	0.025	0.005
10	19	45.6	9.06	1.56	0.090			64					
	20					0.020	33	65	110	8.84	0.350	0.050	
11	21	73.8	7.10	1.68	0.150			66					
	22						34	67	76.8	7.05	0.070		
12	23	92.6	9.93	1.26	0.360	0.030		68					
	24						35	69	51.2	4.53			
13	25	99.5	22.2	0.790	0.330	0.035		70					
	26					0.055	36	71	44.6	3.84			
14	27	108	29.6	0.700	0.290	0.025		72					
	28					0.035	37	73	42.6	3.16			
15	29	129	26.9	2.28	0.295			74					
	30					0.005	38	75	50.9	2.91			
16	31	137	21.2	3.71	0.420			76					
	32					0.015	39	77	43.4	1.92			
17	33	137	19.8	4.69	0.800	0.010		78					
	34					0.015	40	79	24.9	0.215			
18	35	80.3	17.9	4.81	1.05			80					
	36						41	81	7.88	0.015			
19	37	88.4	19.5	4.71	0.970	0.015		82					
	38					0.030	42	83	6.45	0.015			
20	39	73.1	21.3	5.98	0.480	0.055		84					
	40					0.060	43	85	3.23	0.010			
21	41	76.5	21.9	4.05	0.440	0.080		86					
	42					0.015	44	87	2.34				
22	43	84.0	23.1	3.14	0.450	0.015		88					
	44					0.030	45	89	0.325				
23	45	90.8	15.5	3.54	0.740	0.100		90					

Table 5.2 (Continued)

DATE 24 August 1956
TIME 2000-2010 CST

CONCENTRATION (mg m^{-3})

RUN NO. 53

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	155	4.53			
2	3							48					
	4						25	49	37.8	0.115			
3	5							50					
	6						26	51	2.76				
4	7							52					
	8						27	53	0.035				
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27	0.110						72					
	28						37	73					
15	29	2.60						74					
	30						38	75					
16	31	23.1	0.710	0.050				76					
	32						39	77					
17	33	109	16.7	0.775	0.035			78					
	34						40	79					
18	35	218	102	21.0	0.925			80					
	36					0.150	41	81					
19	37	608	305	115	31.7	4.41		82					
	38					24.7	42	83					
20	39	786	534	233	86.2	34.2		84					
	40					25.6	43	85					
21	41	923	488	162	50.3	12.8		86					
	42					2.62	44	87					
22	43	755	268	28.4	3.48	0.210		88					
	44					0.025	45	89					
23	45	410	47.1	0.955				90					

Table 5.2 (Continued)

DATE 24 August 1956
TIME 2200-2210 CST

CONCENTRATION (mg m^{-3})

RUN NO. 54

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					3.60
	2						24	47	374	156	62.0	22.3	7.92
2	3							48					9.51
	4						25	49	422	171	55.8	19.3	6.62
3	5							50					2.64
	6						26	51	356	105	25.0	4.82	0.800
4	7							52					0.050
	8						27	53	215	43.4	6.38	0.670	0.065
5	9							54					0.080
	10						28	55	105	13.2	1.11	0.555	0.085
6	11							56					0.015
	12						29	57	40.1	2.31	0.205		0.070
7	13							58					
	14						30	59	5.87	0.350			
8	15							60					
	16						31	61	1.37				
9	17							62					
	18						32	63	0.070				
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77					
17	33	0.240						78					
	34						40	79					
18	35	0.780						80					
	36						41	81					
19	37	6.81	0.190	0.135				82					
	38						42	83					
20	39	29.1	2.04	0.180				84					
	40						43	85					
21	41	80.1	13.8	1.11	0.050			86					
	42						44	87					
22	43	152	44.4	8.01	0.880	0.040		88					
	44					0.155	45	89					
23	45	261	99.3	32.2	7.12	1.04		90					

DATE 25 August 1956
TIME 0100-0110 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.55

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	0.485	0.010			
2	3							48					
	4						25	49	0.635	0.020			
3	5							50					
	6						26	51	2.45	0.030			
4	7							52					
	8						27	53	8.16	0.190			
5	9							54					
	10						28	55	20.6	1.01	0.035		
6	11							56					
	12						29	57	44.7	5.49	0.430		
7	13							58					
	14						30	59	86.9	18.5	2.53	0.345	0.025
8	15							60					0.115
	16						31	61	145	44.7	13.4	2.10	0.365
9	17							62					0.885
	18						32	63	192	66.8	22.4	5.54	1.85
10	19							64					2.49
	20						33	65	219	84.2	27.2	7.83	2.83
11	21							66					2.39
	22						34	67	218	82.7	26.3	7.35	1.81
12	23							68					1.19
	24						35	69	192	65.6	18.7	3.45	0.615
13	25							70					0.275
	26						36	71	156	38.0	6.09	0.860	0.085
14	27							72					0.020
	28						37	73	97.2	14.9	1.36	0.045	
15	29							74					
	30						38	75	50.1	4.04	0.335		
16	31							76					
	32						39	77	14.3	0.805	0.090		
17	33							78					
	34						40	79	1.01	0.300			
18	35							80					
	36						41	81	0.580	0.080			
19	37							82					
	38						42	83	0.160				
20	39							84					
	40						43	85	0.050				
21	41							86					
	42						44	87					
22	43							88					
	44						45	89					
23	45	0.330						90					

Table 5.2 (Continued)

DATE 25 August 1956
TIME 0300-0310 CST

CONCENTRATION (mg m^{-3})

RUN NO. 56

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	0.335	0.130			
2	3							48					
	4						25	49	2.90	0.155	0.020		
3	5							50					
	6						26	51	8.55	0.405	0.035		
4	7							52					
	8						27	53	33.0	3.50	0.245		
5	9							54					
	10						28	55	77.9	14.1	2.13	0.055	
6	11							56					
	12						29	57	156	40.5	9.01	1.18	0.050
7	13							58					0.195
	14						30	59	216	74.0	22.7	4.90	0.745
8	15							60					2.08
	16						31	61	284	110	33.0	11.3	3.76
9	17							62					4.50
	18						32	63	308	110	36.3	12.6	4.74
10	19							64					4.20
	20						33	65	279	91.7	28.7	8.46	2.48
11	21							66					0.905
	22						34	67	218	70.2	16.7	2.89	0.230
12	23							68					0.075
	24						35	69	147	36.9	5.58	0.510	0.025
13	25							70					
	26						36	71	92.7	13.0	0.915	0.030	
14	27							72					
	28						37	73	41.3	2.81	0.095	0.010	
15	29							74					
	30						38	75	10.8	0.370			
16	31							76					
	32						39	77	2.40				
17	33							78					
	34						40	79	0.310				
18	35							80					
	36						41	81					
19	37							82					
	38						42	83					
20	39							84					
	40						43	85					
21	41	0.085						86					
	42						44	87					
22	43	0.115	0.070					88					
	44						45	89					
23	45	0.200	0.120					90					

Table 5.2 (Continued)

DATE 26 August 1956
TIME 1730-1740 CST

CONCENTRATION (mg m^{-3})

RUN NO. 57

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77	0.145				
17	33							78					
	34						40	79	0.260				
18	35							80					
	36						41	81	0.550				
19	37							82					
	38						42	83	2.31				
20	39							84					
	40						43	85	3.27				
21	41							86					
	42						44	87	5.09	0.145			
22	43							88					
	44						45	89	6.68	0.550			
23	45							90					

Table 5.2 (Continued)

DATE 25 August 1956
TIME 1730-1740 CST

CONCENTRATION (mg m^{-3})

RUN NO.57

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	15.6	2.96	0.590				136					
	92						69	137	0.060				
47	93	32.7	M	1.41	0.020			138					
	94						70	139					
48	95	58.5	9.00	4.19	0.520			140					
	96						71	141					
49	97	81.9	15.3	5.04	1.37			142					
	98						72	143					
50	99	132	29.1	7.35	1.53	0.110		144					
	100					0.335	73	145					
51	101	171	44.7	11.0	2.49	0.690		146					
	102					0.740	74	147					
52	103	224	57.8	18.2	3.60	0.910		148					
	104					1.13	75	149					
53	105	270	74.6	30.0	6.16	1.25		150					
	106					1.79	76	151					
54	107	282	79.4	29.2	8.82	1.96		152					
	108					2.27	77	153					
55	109	281	75.3	26.4	7.33	1.93		154					
	110					1.33	78	155					
56	111	243	59.6	20.4	4.40	0.910		156					
	112					0.730	79	157					
57	113	201	51.6	17.5	3.36	0.590		158					
	114					0.590	80	159					
58	115	159	47.9	12.6	2.78	0.630		160					
	116					0.640	81	161					
59	117	142	37.2	12.6	2.94	0.820		162					
	118					0.930	82	163					
60	119	118	28.7	8.61	2.73	0.660		164					
	120					0.460	83	165					
61	121	86.7	17.7	5.27	2.16	0.320		166					
	122					0.100	84	167					
62	123	54.0	8.70	4.28	1.19			168					
	124						85	169					
63	125	42.2	7.37	2.54	0.250			170					
	126						86	171					
64	127	24.6	4.47	0.510	0.045			172					
	128						87	173					
65	129	10.7	1.37	0.035	0.020			174					
	130						88	175					
66	131	4.82	1.28	0.020				176					
	132						89	177					
67	133	0.850	0.030					178					
	134						90	179					
68	135	0.165						180					
							91	181					

Table 5.2 (Continued)

DATE 25 August 1956
TIME 1930-1940 CST

CONCENTRATION (mg m^{-3})

RUN NO.58

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77					
17	33							78					
	34						40	79	0.020				
18	35							80					
	36						41	81	0.560				
19	37							82					
	38						42	83	0.08				
20	39							84					
	40						43	85	60.2	2.06	0.035		
21	41							86					0.040
	42						44	87	279	48.9	4.34	0.800	3.10
22	43							88					24.5
	44						45	89	557	293	80.9	43.8	59.4
23	45							90					48.2

Table 5.2 (Continued)

DATE 25 August 1956
TIME 1930 - 1940 CST

CONCENTRATION (mg m^{-3})

RUN NO. 58

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	1000	660	311	140	12.0		136					
	92					0.215	69	137					
47	93	794	575	221	27.1			138					
	94						70	139					
48	95	633	318	37.9	0.090			140					
	96						71	141					
49	97	410	52.1	0.550				142					
	98						72	143					
50	99	150	2.93	0.020				144					
	100						73	145					
51	101	21.6						146					
	102						74	147					
52	103	1.10						148					
	104						75	149					
53	105	0.090						150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

DATE 25 August 1956
TIME 2230-2240 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 59

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69	0.110				
13	25							70					
	26						36	71	0.165				
14	27							72					
	28						37	73	0.330				
15	29							74					
	30						38	75	1.36				
16	31							76					
	32						39	77	14.3	0.300			
17	33							78					
	34						40	79	100	7.01	0.090		
18	35							80					
	36						41	81	332	77.0	7.43	0.325	
19	37							82					0.105
	38						42	83	567	303	88.8	22.1	3.43
20	39							84					20.3
	40						43	85	723	524	239	101	39.4
21	41							86					22.3
	42						44	87	707	419	134	26.4	3.55
22	43							88					0.295
	44						45	89	552	174	22.1	0.835	0.030
23	45							90					

Table 5.2 (Continued)

DATE 25 August 1956
TIME 2230 - 2240 CST

CONCENTRATION (mg m^{-3})

RUN NO. 59

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	239	23.6	0.870				136					
	92						69	137					
47	93	67.2	2.51					138					
	94						70	139					
48	95	11.8	0.305					140					
	96						71	141					
49	97	4.43	0.055					142					
	98						72	143					
50	99	0.265						144					
	100						73	145					
51	101							146					
	102						74	147					
52	103							148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 26 August 1956
TIME 0030-0040 CST

CONCENTRATION (mg m^{-3})

RUN NO. 60

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77					
17	33							78					
	34						40	79					
18	35							80					
	36						41	81					
19	37							82					
	38						42	83					
20	39							84					
	40						43	85					
21	41							86					
	42						44	87	0.015	0.010			
22	43							88					
	44						45	89	0.045	0.070			
23	45							90					

Table 5.2 (Continued)

DATE 26 August 1956
TIME 0030 - 0040 CST

CONCENTRATION (mg m^{-3})

RUN NO. 60

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	0.125	0.515					136					
	92						69	137					
47	93	0.210	0.480					138					
	94						70	139					
48	95	0.870	0.375	0.070				140					
	96						71	141					
49	97	4.07	0.470	0.120				142					
	98						72	143					
50	99	22.5	1.73	0.275				144					
	100						73	145					
51	101	65.0	8.12	0.795	0.030			146					
	102						74	147					
52	103	130	33.2	6.40	0.540			148					
	104					0.085	75	149					
53	105	237	83.1	26.4	5.18	0.545		150					
	106					1.79	76	151					
54	107	302	118	43.6	15.1	4.15		152					
	108					6.07	77	153					
55	109	281	114	40.2	10.8	4.75		154					
	110					2.44	78	155					
56	111	212	53.4	13.3	3.20	0.815		156					
	112					0.135	79	157					
57	113	110	27.2	2.98	0.270	0.050		158					
	114						80	159					
58	115	44.7	4.94	0.330				160					
	116						81	161					
59	117	10.6	0.415					162					
	118						82	163					
60	119	1.76	0.060					164					
	120						83	165					
61	121	0.220	0.045					166					
	122						84	167					
62	123	0.140						168					
	124						85	169					
63	125	0.110						170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 27 August 1956
TIME 1100-1110 CST

CONCENTRATION (mg m^{-3})

RUN NO.61

POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1					
	2					
2	3					
	4					
3	5					
	6					
4	7					
	8					
5	9					
	10					
6	11					
	12					
7	13					
	14					
8	15					
	16					
9	17					
	18					
10	19					
	20					
11	21					
	22					
12	23					
	24					
13	25					
	26					
14	27					
	28					
15	29					
	30					
16	31					
	32					
17	33					
	34					
18	35					
	36					
19	37					
	38					
20	39					
	40					
21	41					
	42					
22	43					
	44					
23	45					

POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m
	46					
24	47					
	48					
25	49					
	50					
26	51					
	52					
27	53					
	54					
28	55					
	56					
29	57					
	58					
30	59					
	60					
31	61					
	62					
32	63					
	64					
33	65					
	66					
34	67					
	68					
35	69					
	70					
36	71					
	72					
37	73					
	74					
38	75					
	76					
39	77					
	78					
40	79	0.325				
	80					
41	81	4.53				
	82					
42	83	9.57				
	84					
43	85	18.9	0.095			
	86					
44	87	20.9	1.85			
	88					
45	89	19.8	4.85	0.075		
	90					

Table 5.2 (Continued)

DATE 27 August1956
TIME 1100 - 1110 CST

CONCENTRATION (mg m^{-3})

RUN NO. 61

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	29.3	6.36	0.870	0.025			136					
	92						69	137	18.2	5.22	1.38	0.085	
47	93	46.2	9.03	3.75	0.070			138					
	94						70	139	22.7	5.37	1.37		
48	95	60.9	17.3	3.34	1.04	0.030		140					
	96					0.080	71	141	17.1	5.67	0.780		
49	97	72.9	21.8	4.08	1.15	0.125		142					
	98					0.265	72	143	12.3	4.05	0.140		
50	99	87.3	25.4	7.13	1.89	0.390		144					
	100					0.625	73	145	8.09	0.865			
51	101	104	32.0	9.73	3.19	0.965		146					
	102					0.845	74	147	2.24	0.055			
52	103	133	35.3	12.2	3.39	0.685		148					
	104					0.615	75	149	0.050				
53	105	201	41.3	12.4	3.05	0.595		150					
	106					0.545	76	151	0.045				
54	107	161	42.6	14.5	3.16	0.555		152					
	108					0.600	77	153					
55	109	161	48.8	16.1	3.65	0.775		154					
	110					0.905	78	155					
56	111	159	55.7	17.3	4.33	0.955		156					
	112					0.845	79	157					
57	113	143	54.3	15.5	3.21	0.735		158					
	114					0.595	80	159					
58	115	148	43.8	10.4	2.31	0.510		160					
	116					0.450	81	161					
59	117	128	39.6	9.83	2.05	0.425		162					
	118					0.320	82	163					
60	119	106	30.0	9.23	2.36	0.420		164					
	120					0.280	83	165					
61	121	85.4	29.4	8.42	2.09	0.230		166					
	122					0.185	84	167					
62	123	71.1	19.5	7.39	1.11	0.180		168					
	124					0.170	85	169					
63	125	59.0	16.7	4.93	1.05	0.085		170					
	126					0.080	86	171					
64	127	42.5	13.3	4.83	1.10	0.080		172					
	128					0.105	87	173					
65	129	40.2	11.7	4.26	0.925	0.145		174					
	130					0.145	88	175					
66	131	35.6	8.87	2.66	0.665	0.135		176					
	132					0.060	89	177					
67	133	26.1	6.08	1.50	0.480			178					
	134						90	179					
68	135	21.3	4.67	1.29	0.445			180					
							91	181					

Table 5.2 (Continued)

DATE 27 AUGUST 1956
TIME 1400 - 1410 CST

CONCENTRATION (mg m^{-3})

RUN NO. 62

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91							136					
	92						69	137	29.1	4.11	0.045		
47	93							138					
	94						70	139	14.6	2.60			
48	95	0.160						140					
	96						71	141	7.20	0.615			
49	97	0.780						142					
	98						72	143	4.05	0.390			
50	99	2.66	0.065					144					
	100						73	145	3.39	0.170			
51	101	6.89	1.03					146					
	102						74	147	2.24	0.095			
52	103	14.2	3.68					148					
	104						75	149	1.32	0.160			
53	105	50.1	6.03	0.245		0.015		150					
	106					0.040	76	151	0.380	0.105			
54	107	99.6	15.2	1.21		0.075		152					
	108					0.185	77	153	0.065	0.070			
55	109	145	28.2	3.93	0.050	0.330		154					
	110					0.220	78	155	0.230				
56	111	179	49.4	8.78	0.585	0.210		156					
	112					0.210	79	157	0.170				
57	113	231	76.4	16.2	1.45	0.430		158					
	114					0.645	80	159	0.175				
58	115	296	88.4	21.5	3.71	0.745		160					
	116					1.06	81	161	0.165				
59	117	335	113	32.9	7.33	1.45		162					
	118					1.50	82	163	0.180				
60	119	378	115	33.8	8.08	1.93		164					
	120					1.46	83	165	0.160				
61	121	333	98.4	31.4	7.63	1.72		166					
	122					1.44	84	167	0.120				
62	123	266	81.0	25.5	7.94	1.27		168					
	124					0.835	85	169	0.115				
63	125	170	67.7	16.0	7.66	0.605		170					
	126					0.350	86	171					
64	127	168	45.0	9.79	1.75	0.190		172					
	128					0.125	87	173					
65	129	144	31.7	5.82	0.745	0.075		174					
	130					0.075	88	175					
66	131	113	16.4	2.92	0.320	0.095		176					
	132					0.085	89	177					
67	133	80.3	7.01	1.79	0.050	0.075		178					
	134					0.090	90	179					
68	135	54.2	6.59	0.445		0.090		180					
							91	181					

Table 5.2 (Continued)

DATE 29 August 1956
TIME 1930-1940 CST

CONCENTRATION (mg m^{-3})

RUN NO. 65

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59	0.045				
8	15							60					
	16						31	61	0.065				
9	17							62					
	18						32	63	0.150				
10	19							64					
	20						33	65	0.215				
11	21							66					
	22						34	67	0.370				
12	23							68					
	24						35	69	0.945				
13	25							70					
	26						36	71	2.94	0.045			
14	27							72					
	28						37	73	12.3	0.550			
15	29							74					
	30						38	75	39.3	5.81	0.170		
16	31							76					
	32						39	77	93.5	19.4	2.17	0.120	
17	33							78					0.015
	34						40	79	174	60.9	14.8	2.37	0.290
18	35							80					1.47
	36						41	81	281	116	37.8	12.7	3.42
19	37							82					6.12
	38						42	83	354	153	56.2	21.1	7.02
20	39							84					6.08
	40						43	85	312	118	38.7	11.4	3.32
21	41							86					0.925
	42						44	87	213	63.0	13.7	1.70	0.165
22	43							88					0.030
	44						45	89	118	20.3	2.09	0.095	
23	45							90					

DATE 29 August 1956
TIME 1930-1940 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO.65

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	49.4	3.90	0.145				136					
	92						69	137					
47	93	16.2	0.415					138					
	94						70	139					
48	95	2.36						140					
	96						71	141					
49	97	0.310						142					
	98						72	143					
50	99							144					
	100						73	145					
51	101							146					
	102						74	147					
52	103							148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 29 August 1956
TIME 2130-2140 CST

CONCENTRATION (mg m^{-3})

RUN NO.66

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47	0.430				
2	3							48					
	4						25	49	0.445				
3	5							50					
	6						26	51	0.365	0.055			
4	7							52					
	8						27	53	0.305	0.100			
5	9							54					
	10						28	55	0.280	0.205			
6	11							56					
	12						29	57	0.315	0.245			
7	13							58					
	14						30	59	0.885	0.270	0.150		
8	15							60					
	16						31	61	4.64	0.495	0.080		
9	17							62					
	18						32	63	24.9	1.64	0.555		
10	19							64					
	20						33	65	76.4	28.8	4.58	0.190	
11	21							66					
	22						34	67	158	78.9	28.1	5.65	0.025
12	23							68					0.130
	24						35	69	159	106	45.9	17.1	1.09
13	25							70					4.80
	26						36	71	218	82.1	29.9	13.1	7.72
14	27							72					6.88
	28						37	73	203	60.0	19.8	6.24	5.21
15	29							74					4.13
	30						38	75	215	64.4	20.5	7.00	2.68
16	31							76					2.85
	32						39	77	278	98.9	31.6	11.2	3.29
17	33							78					4.88
	34						40	79	359	155	57.7	23.2	7.50
18	35	0.060						80					7.17
	36						41	81	390	176	66.9	19.3	2.61
19	37	0.130						82					0.445
	38						42	83	321	138	30.0	2.86	0.035
20	39	0.200						84					
	40						43	85	234	47.3	4.34	0.030	
21	41	0.275						86					
	42						44	87	114	9.41	0.225		
22	43	0.350						88					
	44						45	89	37.2	0.960	0.060		
23	45	0.395						90					

Table 5.2 (Continued)

DATE 29 August 1956
TIME 2130-2140 CST

CONCENTRATION (mg m^{-3})

RUN NO. 66

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	3.02						136					
	92						69	137					
47	93	0.085						138					
	94						70	139					
48	95							140					
	96						71	141					
49	97							142					
	98						72	143					
50	99							144					
	100						73	145					
51	101							146					
	102						74	147					
52	103							148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 30 August 1956
TIME 0030-0040 CST

CONCENTRATION (mg m^{-3})

RUN NO.67

POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m	POST NO. Inner Arcs	POST NO. 800m arc	ARC 50m	ARC 100m	ARC 200m	ARC 400m	ARC 800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57					
7	13							58					
	14						30	59					
8	15							60					
	16						31	61					
9	17							62					
	18						32	63					
10	19							64					
	20						33	65					
11	21							66					
	22						34	67					
12	23							68					
	24						35	69					
13	25							70					
	26						36	71					
14	27							72					
	28						37	73					
15	29							74					
	30						38	75					
16	31							76					
	32						39	77	0.065				
17	33							78					
	34						40	79	0.175				
18	35							80					
	36						41	81	0.670	0.035			
19	37							82					
	38						42	83	2.60	0.160	0.040		
20	39							84					
	40						43	85	10.6	2.16	0.070		
21	41							86					
	42						44	87	39.0	7.08	0.720	0.070	
22	43							88					
	44						45	89	84.2	23.7	3.72	0.380	
23	45							90					.075

DATE 30 August 1956
TIME 0030-0040 CST

Table 5.2 (Continued)

CONCENTRATION (mg m^{-3})

RUN NO. 67

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	150	52.1	13.0	2.27	0.410		136					
	92					1.46	69	137					
47	93	222	78.8	25.0	8.46	2.77		138					
	94					3.62	70	139					
48	95	281	124	41.1	13.8	4.37		140					
	96					5.99	71	141					
49	97	306	126	48.3	17.3	6.10		142					
	98					4.61	72	143					
50	99	275	109	36.3	10.4	1.81		144					
	100					0.390	73	145					
51	101	186	55.2	14.8	1.78	0.120		146					
	102						74	147					
52	103	105	21.0	2.61	0.065			148					
	104						75	149					
53	105	40.8	4.55	0.195				150					
	106						76	151					
54	107	14.5	0.545					152					
	108						77	153					
55	109	3.75	0.110					154					
	110						78	155					
56	111	0.935	0.105					156					
	112						79	157					
57	113	0.165	0.235					158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.2 (Continued)

DATE 30 August 1956
TIME 0230-0240 CST

CONCENTRATION (mg m^{-3})

RUN NO. 68

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
1	1							46					
	2						24	47					
2	3							48					
	4						25	49					
3	5							50					
	6						26	51					
4	7							52					
	8						27	53					
5	9							54					
	10						28	55					
6	11							56					
	12						29	57	0.105				
7	13							58					
	14						30	59	0.130				
8	15							60					
	16						31	61	0.175				
9	17							62					
	18						32	63	0.255				
10	19							64					
	20						33	65	0.435	0.055			
11	21							66					
	22						34	67	0.790	0.035	0.030		
12	23							68					
	24						35	69	3.21	0.450	0.035		
13	25							70					
	26						36	71	17.0	0.780	0.030		
14	27							72					
	28						37	73	38.6	4.56	M		
15	29							74					
	30						38	75	102	19.7	1.88	0.045	
16	31							76					
	32						39	77	188	56.6	9.27	0.450	
17	33							78					
	34						40	79	320	110	28.5	4.31	0.100
18	35							80					0.255
	36						41	81	480	173	47.3	13.9	0.890
19	37							82					M
	38						42	83	581	275	77.5	22.0	8.09
20	39							84					14.2
	40						43	85	561	306	120	41.1	20.2
21	41							86					21.8
	42						44	87	470	231	85.9	35.2	14.6
22	43							88					5.60
	44						45	89	336	105	28.9	10.2	0.980
23	45							90					0.090

Table 5.2 (Continued)

DATE 30 August 1956
TIME 0230-0240 CST

CONCENTRATION (mg m^{-3})

RUN NO. 68

POST NO.		ARC					POST NO.		ARC				
Inner Arcs	800m arc	50m	100m	200m	400m	800m	Inner Arcs	800m arc	50m	100m	200m	400m	800m
46	91	146	23.4	4.45	0.935			136					
	92						69	137					
47	93	57.0	3.60	0.220	0.015			138					
	94						70	139					
48	95	14.6	0.355	0.020				140					
	96						71	141					
49	97	3.11						142					
	98						72	143					
50	99	0.390						144					
	100						73	145					
51	101							146					
	102						74	147					
52	103							148					
	104						75	149					
53	105							150					
	106						76	151					
54	107							152					
	108						77	153					
55	109							154					
	110						78	155					
56	111							156					
	112						79	157					
57	113							158					
	114						80	159					
58	115							160					
	116						81	161					
59	117							162					
	118						82	163					
60	119							164					
	120						83	165					
61	121							166					
	122						84	167					
62	123							168					
	124						85	169					
63	125							170					
	126						86	171					
64	127							172					
	128						87	173					
65	129							174					
	130						88	175					
66	131							176					
	132						89	177					
67	133							178					
	134						90	179					
68	135							180					
							91	181					

Table 5.3

Ten-minute average gas concentrations measured along the vertical during Project Prairie Grass; entries are in units of mg m^{-3}. Samplers were located at nine levels on each of six towers positioned along the 100-m arc of the horizontal sampling network. Individual towers were located equidistant between the pairs of fence posts listed below:

TOWER NO.	POST NOS.
1	28-29
2	35-36
3	42-43
4	49-50
5	56-57
6	63-64

Remarks

The vertical sampling network was first placed in operation during Run No. 13 on 22 July 1956. No data are available for Runs No. 23, 28, 35, 53, 63, and 64. All towers were outside the time-mean plume during Runs No. 23, 35, and 53. The letter "M" indicates missing data, and blank spaces in the table signify no measurable concentration. The value of the concentration at the 0.5-m level on Tower No. 4 for Run No. 13 was estimated.

Table 5.3 (Continued)

CONCENTRATION (mg m^{-3})

Tower No.	Height (m)	Run No. 13	14	15	16	17	18	19	20	21
1	17.5							0.250		
	13.5							1.43		
	10.5							2.42		
	7.5							3.09		
	4.5							3.80		
	2.5							5.91		
	1.5							7.34		
	1.0							7.31		
	0.5							7.01		
2	17.5				0.025			3.12	0.130	
	13.5				0.045			5.40	0.385	
	10.5				0.140			7.11	0.975	
	7.5				0.275			14.2	3.26	
	4.5		0.175		0.055			25.1	7.58	
	2.5		8.34		0.035			35.0	11.9	
	1.5		23.0		0.095			40.7	13.1	
	1.0		28.5		0.080			41.6	13.4	
	0.5		29.6		0.050			41.9	13.3	
3	17.5		0.280	0.085	8.87	0.280		1.07	0.440	0.090
	13.5			0.580	6.57	M		3.80	2.01	0.720
	10.5		0.330	0.175	6.56	5.09		8.21	5.19	4.29
	7.5			0.170	10.9	18.9	0.250	16.8	13.3	15.3
	4.5		2.22	0.360	18.9	55.4	2.04	29.6	26.1	42.9
	2.5		76.2	0.245	25.4	92.6	5.16	41.4	39.9	70.8
	1.5	3.18	174	0.285	28.5	115	6.02	M	45.6	83.7
	1.0	42.9	237	0.235	29.6	126	5.87	54.2	46.5	90.5
	0.5	61.8	297	0.400	29.0	132	6.02	56.7	47.7	96.3
4	17.5		0.415	2.84	13.6		0.085	0.030	1.29	
	13.5		1.46	4.16	16.5	0.040	1.23	0.095	3.33	
	10.5		0.095	7.46	15.9	0.130	2.76	0.215	5.87	0.080
	7.5		0.090	7.29	17.1	0.580	3.59	0.720	7.52	0.255
	4.5		0.070	9.24	22.8	2.66	41.0	1.25	10.7	0.585
	2.5	28.7	0.860	11.3	23.4	3.45	101	1.47	14.1	0.835
	1.5	239	1.97	10.6	23.1	3.66	135	1.31	15.9	1.05
	1.0	675	2.42	10.8	23.7	4.14	153	1.43	16.4	1.18
	0.5	2200*	2.67	10.8	23.6	3.56	165	1.53	17.1	1.29
5	17.5		0.070	5.21	1.55					
	13.5			11.8	2.73					
	10.5			19.2	3.81					
	7.5			30.2	7.37					
	4.5		0.100	58.8	9.17					
	2.5	1.14	0.540	74.7	8.58					
	1.5	34.5	1.56	83.1	10.4					
	1.0	83.3	2.09	81.3	11.0					
	0.5	158	2.45	106	11.8					
6	17.5		0.145	4.67	1.53					
	13.5		0.105	8.22	4.44					
	10.5		0.090	8.99	7.10					
	7.5			14.5	11.0					
	4.5			19.8	12.1					
	2.5		0.100	20.0	14.3					
	1.5			30.3	13.7					
	1.0		0.085	38.9	13.4					
	0.5			42.2	14.5					

*ESTIMATED VALUE

Table 5.3 (Continued)
CONCENTRATION (mg m^{-3})

Tower No.	Height (m)	Run No. 22	24	25	26	27	29	30	31	32
1	17.5		0.110	0.195						
	13.5		1.00	0.650						
	10.5		3.71	0.230						
	7.5		10.7	0.630						
	4.5		25.8	0.565						
	2.5		38.9	0.525						
	1.5		44.3	0.970						
	1.0		47.4	1.06						
	0.5		50.1	0.365						
2	17.5	0.040		6.51	0.015	0.005				
	13.5	0.080		5.61	0.035	0.150				
	10.5	0.130		11.5	0.065	0.225				
	7.5	0.225		15.5	0.170	0.370				
	4.5	0.325		17.9	0.130	0.980				
	2.5	0.215		20.3	0.035	3.92				0.150
	1.5	0.340		20.7	0.035	5.37				0.190
	1.0	0.175		20.3	0.025	5.96				0.205
	0.5	0.150		19.8	0.015	6.56				0.125
3	17.5	0.200		10.4	1.20	1.68		1.09		
	13.5	1.33		14.0	3.24	4.40		2.22		
	10.5	4.31		21.3	6.20	7.05		3.56		
	7.5	12.6		24.2	7.85	16.8		5.10		0.375
	4.5	33.6		28.2	15.3	30.9		7.98		38.1
	2.5	60.8		29.6	22.2	44.6		10.6		330
	1.5	76.8		28.7	25.2	54.6		10.4		651
	1.0	81.8		30.5	27.0	60.6		10.6		830
	0.5	86.9		31.4	29.1	64.5		10.9		951
4	17.5			3.38	0.920	1.33		1.16		
	13.5			6.35	2.39	M		2.34		
	10.5			7.94	3.54	M		4.17		
	7.5			8.90	10.2	12.8		7.11		
	4.5			9.32	22.4	25.8		15.0		
	2.5			15.9	35.6	39.3		23.1		
	1.5			19.1	44.1	44.7		29.3		0.055
	1.0			20.4	46.5	47.4		32.4		0.200
	0.5			23.0	50.4	49.4		35.6		7.02
5	17.5			1.64	0.400	0.145		1.36		
	13.5			2.30	1.16	M		2.22		
	10.5			2.01	1.94	M	0.120	6.11		
	7.5			7.38	4.37	2.34	1.07	14.3	0.150	
	4.5			9.74	7.59	2.55	5.36	28.5	0.705	
	2.5			13.0	11.7	2.55	9.89	39.2	2.90	
	1.5			13.4	15.5	2.84	11.9	46.4	4.64	
	1.0			12.8	17.1	2.86	12.8	48.6	5.25	
	0.5			12.6	19.1	3.12	12.2	49.5	4.91	
6	17.5			2.00	0.115		M		1.91	
	13.5			4.04	0.045		M	0.095	4.56	
	10.5			5.69	0.040		M	0.110	8.19	
	7.5			8.15	0.695		M	0.895	13.8	
	4.5			13.4	1.45		M	2.72	21.5	
	2.5			20.1	2.51		57.6	4.43	32.7	
	1.5			29.3	2.85		67.7	5.64	33.8	
	1.0			30.6	3.20		68.9	6.44	35.7	
	0.5			34.1	3.54		74.1	7.11	38.4	

Table 5.3 (Continued)
CONCENTRATION (mg m^{-3})

Tower No.	Height (m)	Run No. 33	34	35S	36	37	38	39	40	41
1	17.5		1.59							
	13.5		2.40	0.070				0.335		
	10.5		5.88	1.04				1.76		
	7.5		17.4	3.92				8.91		
	4.5		38.1	16.8				28.2		
	2.5		59.3	30.2				11.3		
	1.5		68.7	36.2				61.8		
	1.0		73.2	38.7				67.1		
	0.5		78.6	41.3				66.3		
2	17.5		0.085							
	13.5	0.045	0.730				0.035			
	10.5	0.175	2.60				0.180			
	7.5	0.310	4.38		0.590		0.815			
	4.5	0.530	6.98		54.8		2.15			
	2.5	1.50	8.10		296		2.13			
	1.5	1.67	8.78		492		2.36			
	1.0	1.70	9.08		584		2.36			
	0.5	1.19	8.94		660		2.43			
3	17.5	0.295					0.055		0.005	
	13.5	1.10					0.580		0.150	
	10.5	2.00				0.315	2.55		1.88	
	7.5	5.19				0.880	8.99		12.7	
	4.5	8.36				1.94	29.1		38.1	
	2.5	13.3				2.96	49.7		67.7	
	1.5	16.5				3.18	58.1		86.0	
	1.0	18.9				3.18	61.8		95.1	
	0.5	20.0				3.27	61.4		104	
4	17.5	0.710				0.180				
	13.5	2.58				0.710				
	10.5	6.81				3.53			0.610	
	7.5	15.9				13.0			4.65	0.020
	4.5	35.3				35.4			22.4	0.420
	2.5	56.1				57.2			47.4	0.510
	1.5	64.7				64.8			59.9	0.780
	1.0	69.0				71.9			65.4	0.660
	0.5	73.2				75.6			68.3	0.780
5	17.5									
	13.5									
	10.5	0.045								0.585
	7.5	0.195								3.45
	4.5	0.260				0.065				17.1
	2.5	0.350				0.110				31.5
	1.5	0.250				0.110				36.3
	1.0	0.200				0.070				36.5
	0.5	0 190				0.075				36.8
6	17.5									
	13.5									
	10.5									
	7.5									
	4.5									
	2.5									
	1.5									
	1.0									
	0.5									

Table 5.3 (Continued)

CONCENTRATION (mg m^{-3})

Tower No.	Height (m)	Run No. 42	43	44	45	46	47	48S	48	49
1	17.5		0.630	1.01		0.135				
	13.5		2.42	3.54	0.340	0.180				
	10.5		3.95	7.08	0.440	0.730				
	7.5		5.04	13.1	0.670	3.66				
	4.5		5.87	17.6	1.91	12.6				
	2.5		6.05	22.5	1.58	24.2				
	1.5		5.97	25.1	1.44	32.1				
	1.0		6.29	27.2	1.45	37.7				
	0.5		6.57	29.7	1.64	41.0				
2	17.5		2.27	0.600	0.135			0.950		
	13.5		5.49	3.03	1.32			0.740		
	10.5		8.85	6.02	4.50			1.27		
	7.5		13.8	11.6	14.0			1.91		
	4.5		17.0	24.2	41.3	0.020		2.00		
	2.5		18.3	36.0	75.5	0.035		2.37		
	1.5		19.5	43.2	96.9	0.045		2.42		
	1.0		21.2	48.2	107	0.035		2.46		
	0.5		21.5	48.5	113	0.060		2.13		
3	17.5		2.88	1.37	0.355			7.50		0.020
	13.5		6.38	1.89	0.835			9.05		0.055
	10.5		11.4	4.71	1.50			9.71		0.040
	7.5		19.5	8.27	4.67			11.8		0.345
	4.5		38.3	12.7	12.5			11.4		1.10
	2.5		51.9	14.7	19.7			11.8		2.96
	1.5		54.6	15.0	24.2			10.7		3.99
	1.0		57.8	14.9	26.0			10.9		4.88
	0.5		60.6	14.6	27.0			11.3		5.07
4	17.5		0.150	0.160				3.35		0.630
	13.5		0.930	0.320				4.01		1.71
	10.5		2.49	0.270				4.59		4.85
	7.5		4.61	0.070				3.75		9.42
	4.5		12.8	0.015				4.41		17.6
	2.5		19.2	0.020				3.83		21.8
	1.5		23.0	0.035				3.36		24.3
	1.0		24.2	0.015				3.24		25.1
	0.5		25.1	0.050				3.24		24.8
5	17.5							5.42	0.070	0.580
	13.5	0.185						4.95	0.750	1.70
	10.5	1.32						5.42	1.74	5.21
	7.5	3.08						6.36	4.76	15.2
	4.5	8.28						6.18	7.10	38.9
	2.5	12.9						8.73	9.15	50.4
	1.5	15.5						8.43	10.6	66.3
	1.0	15.9						8.31	10.8	68.6
	0.5	16.4						8.69	11.3	73.1
6	17.5	0.050					0.065	6.32	0.880	1.22
	13.5	0.345					0.375	6.65	5.09	1.74
	10.5	1.86					0.460	6.41	10.5	2.72
	7.5	7.13					0.665	6.56	25.1	5.21
	4.5	18.9					0.530	4.19	43.8	7.80
	2.5	32.9					0.155	5.13	59.7	11.6
	1.5	37.4					0.250	5.70	66.6	12.8
	1.0	39.5					0.440	6.06	69.5	14.0
	0.5	43.1					0.410	6.32	72.8	14.9

Table 5.3 (Continued)

CONCENTRATION (mg m-3)

Tower No.	Height (m)	Run No. 50	51	52	54	55	56	57	58	59
1	17.5			6.29						
	13.5			10.9		0.025	0.250			
	10.5			15.2	0.125	0.335	1.28			
	7.5			17.9	0.945	1.14	6.09			
	4.5			22.1	2.84	2.40	13.8			
	2.5			25.2	6.78	3.29	16.2			
	1.5			24.9	6.63	3.26	26.3			
	1.0			25.5	7.10	3.30	26.9			
	0.5			24.3	7.10	3.00	27.3			
2	17.5			1.10		0.200	0.030			
	13.5			1.58		1.07	0.160			
	10.5			1.64		3.86	1.43			
	7.5			4.50		10.4	5.24			
	4.5			5.28		26.0	12.5			
	2.5			5.54		44.4	19.7			
	1.5			3.48		54.0	23.1			
	1.0			3.48		58.4	23.7			
	0.5			4.55		60.5	20.7			
3	17.5									
	13.5									
	10.5									
	7.5									1.40
	4.5								0.225	47.6
	2.5								0.500	239
	1.5								0.420	399
	1.0								0.295	485
	0.5								0.235	546
4	17.5							0.175		
	13.5							1.62		
	10.5							3.56		
	7.5							6.81		
	4.5							14.6	0.355	
	2.5							21.5	5.81	
	1.5							27.6	13.3	
	1.0							31.1	17.4	
	0.5							32.7	20.0	
5	17.5	0.940						0.795		
	13.5	2.81						2.33		
	10.5	5.66						6.27		
	7.5	8.70						15.0		
	4.5	13.4						35.6		
	2.5	18.3						55.5		
	1.5	20.7						67.1		
	1.0	20.9						69.3		
	0.5	21.3						72.6		
0	17.5	0.700						0.055		
	13.5	2.13						0.455		
	10.5	6.39	0.320					0.690		
	7.5	15.2	0.805					1.76		
	4.5	29.1	2.27					3.12		
	2.5	41.1	2.66					7.16		
	1.5	46.4	2.78					8.19		
	1.0	49.1	2.75					8.70		
	0.5	53.4	2.69					9.18		

Table 5.3 (Continued)

CONCENTRATION (mg m^{-3})

Tower No.	Height (m)	Run No. 60	61	62	65	66	67	68		
1	17.5									
	13.5									
	10.5									
	7.5									
	4.5					0.065				
	2.5					0.230				
	1.5					0.185				
	1.0					0.225				
	0.5					0.210				
2	17.5									
	13.5									
	10.5									
	7.5					2.04		0.115		
	4.5					25.5		0.430		
	2.5					76.5		0.490		
	1.5					106		0.390		
	1.0					118		0.330		
	0.5					116		0.415		
3	17.5									
	13.5		0.085		0.925			0.020		
	10.5		0.205		4.80	0.065		0.220		
	7.5		0.300		20.4	3.21	0.120	7.23		
	4.5		0.250		64.2	30.0	0.275	71.7		
	2.5		0.070		120	73.5	0.805	200		
	1.5		0.045		145	93.9	0.865	281		
	1.0		0.065		158	100	0.955	330		
	0.5		0.070		164	103	1.17	362		
4	17.5		0.245				0.025			
	13.5	0.020	1.62				0.400			
	10.5	0.065	4.37	0.080			3.50			
	7.5	0.385	9.29	0.170			16.7			
	4.5	0.500	15.9	0.145			53.7			
	2.5	0.745	22.1				92.7			
	1.5	0.985	23.7				120			
	1.0	0.940	23.4				129			
	0.5	0.785	23.7				143			
5	17.5	0.005	0.165	2.09						
	13.5	0.480	0.705	4.83						
	10.5	1.97	2.69	9.53						
	7.5	8.00	8.63	15.6						
	4.5	23.0	25.2	21.8						
	2.5	38.3	42.8	50.1						
	1.5	47.4	54.0	60.9						
	1.0	49.7	59.3	67.7						
	0.5	50.7	M	71.9						
6	17.5		0.070	5.46						
	13.5		0.200	8.89						
	10.5		0.950	14.6						
	7.5		2.16	21.0						
	4.5		7.61	37.5						
	2.5		13.5	57.6						
	1.5		14.7	61.8						
	1.0		15.5	61.8						
	0.5		17.0	63.0						

Table 5.4. Correction factors by which concentration data presented in Tables 5.2 and 5.3 should be multiplied to compensate for evaporational loss of impinger solution during aspiration. Tower data corrections are the same as those for the 100-m arc. Blank spaces signify missing data.

	ARC (m)				
RUN NO.	50	100	200	400	800
1	0.97	0.96	0.90	0.93	0.96
2			0.92	0.93	0.96
3	0.99	1.00	0.99	0.98	1.00
4	0.98	0.99	0.98	0.99	1.00
5	0.93	0.93	0.90	0.91	0.91
6	0.93	0.93	0.90	0.89	0.92
7	0.95	0.93	0.91	0.90	0.92
8	0.94	0.93	0.90	0.89	0.92
9	0.93	0.94	0.92	0.93	0.93
10	0.95	0.94	0.92	0.92	0.93
11	0.96	0.96	0.95	0.95	0.95
12	0.95	0.95	0.93	0.93	0.92
13	0.97	0.97	0.95	0.95	0.95
14	0.99	0.99	0.97	0.97	0.98
15	0.94	0.96	0.95	0.95	0.96
16	0.96	0.96	0.94	0.94	0.95
17	0.95	0.95	0.93	0.92	0.93
18	0.98	0.97	0.97	0.95	0.97
19	0.93	0.93	0.91	0.90	0.91
20	0.92	0.93	0.89	0.88	0.89
21	0.98	0.97	0.94	0.95	0.93
22	0.99	0.98	0.95	0.96	0.94
23	0.95	0.94	0.93	0.93	0.94
24	0.94	0.95	0.94	0.93	0.94
25	0.94	0.94	0.94	0.94	0.94
26	0.95	0.95	0.93	0.93	0.93
27	0.94	0.94	0.92	0.92	0.92
28	0.99	1.00	0.97	0.98	0.97
29	0.97	0.98	0.97	0.97	0.97
30					
31					
32	0.97	0.93	0.93	0.92	0.93
33	0.94	0.94	0.93	0.93	0.93
34	0.93	0.93	0.89	0.91	0.91
35	0.94	0.94	0.94	0.94	0.94
35S	0.96	0.98	0.98	0.97	0.98
36	0.96	0.96	0.95	0.94	0.96
37	0.99	0.99	0.97	0.98	0.98
38	0.98	0.99	0.98	0.98	0.98
39	0.94	0.95	0.93	0.93	0.95

Table 5.4 (Continued)

RUN NO.	ARC (m) 50	100	200	400	800
40	0.96	0.98	0.96	0.94	0.94
41	0.97	0.97	0.96	0.95	0.96
42	0.96	0.97	0.96	0.97	0.97
43	0.91	0.90	0.87	0.87	0.87
44	0.91	0.92	0.87	0.85	0.88
45	0.92	0.92	0.88	0.87	0.88
46	0.92	0.93	0.92	0.92	0.92
47	0.93	0.94	0.93	0.93	0.93
48	0.96	0.96	0.95	0.96	0.96
48S	0.93	0.94	0.92	0.93	0.88
49	0.97	0.95	0.94	0.93	0.94
50	0.92	0.93	0.93	0.92	0.92
51	0.96	0.95	0.92	0.91	0.90
52	0.93	0.93	0.90	0.89	0.90
53	0.99	0.97	0.96	0.95	0.96
54	0.98	0.96	0.96	0.97	0.97
55	0.95	0.97	0.96	0.95	0.96
56	0.99	0.98	0.98	0.98	0.97
57	0.91	0.93	0.88	0.88	0.88
58	0.95	0.96	0.93	0.93	0.91
59	0.97	0.97	0.93	0.93	0.92
60	0.95	0.94	0.93	0.92	0.93
61	0.89	0.92	0.88	0.88	0.92
62		0.91	0.87	0.88	0.96
63					
64					
65	0.94	0.95	0.93	0.93	
66	0.94	0.98	0.97	0.94	0.95
67	0.97	0.97	0.95	0.95	
68	0.96	0.97	0.96	0.96	0.94

CHAPTER 6

SLOW-RESPONSE METEOROLOGICAL OBSERVATIONS DURING PROJECT PRAIRIE GRASS

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6.1 Introduction

During the Project Prairie Grass diffusion experiments, mean wind speed and fluctuations in azimuth wind direction were measured at a height of 2 m above the ground at two locations. Closely-matched cup anemometers of conventional design were used to obtain wind speed data; fluctuations in wind direction were measured by means of airfoil-type vanes (subsequently replaced by flat-plate vanes). One pair of these instruments was installed along the base line of the sulfur-dioxide sampling network; the cup anemometer was mounted on a wood post set in the ground at a point 25 m directly west of the release-point for the tracer; the azimuth vane and recorder were similarly located directly east of the release-point. The second pair of instruments was located about 450 m north (downwind) of the release-point and approximately 30 m directly west of the center line of the horizontal sampling network; the lateral separation between the two posts supporting the instruments was about 10 meters. The recorder was mounted on a panel, located on the center line of the sampling network at 450 m, with the manual switches for operating the vacuum-pump motors. The cup anemometer and azimuth vane assemblies are shown in Figures 6.1 and 6.2. The azimuth vane and recorder installed along the base line of the sampling network appear in Figure 6.3. Detailed descriptions of the instrumentation and the treatment of the observations are presented in the remaining sections.

6.2 Description of Instrumentation

The cup anemometers are almost identical with those used previously in the Great Plains Turbulence Field Program.[1] The cup

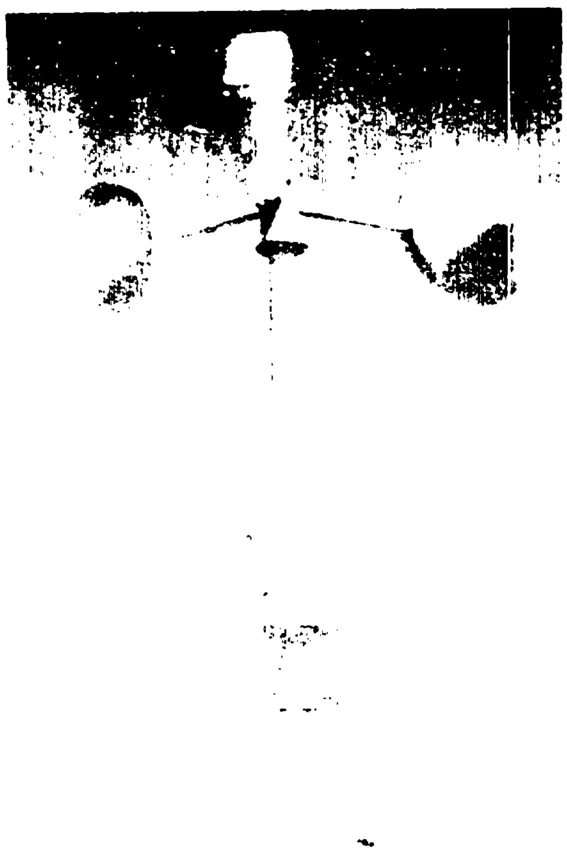

Figure 6.1 Cup anemometer assembly.

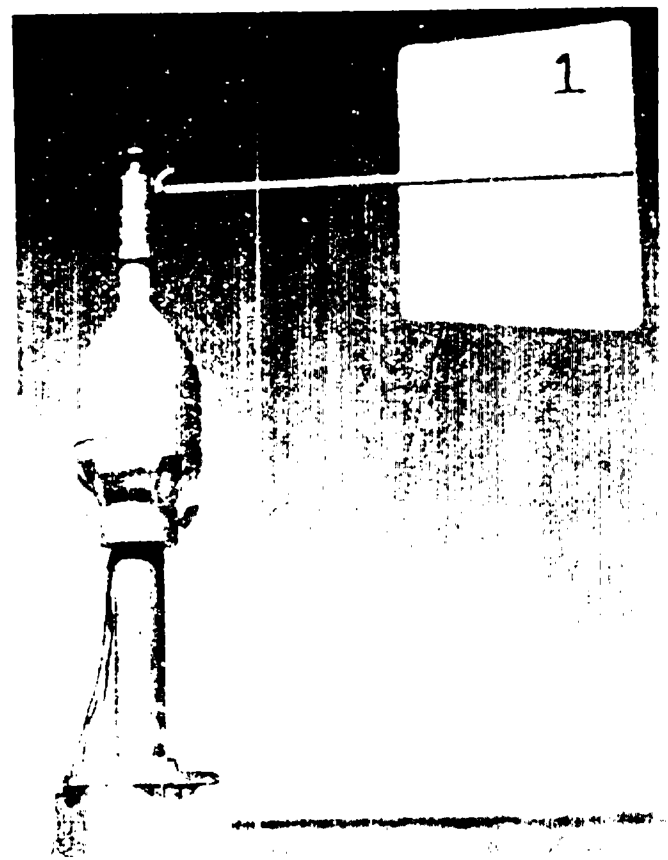

Figure 6.2 Azimuth vane assembly.

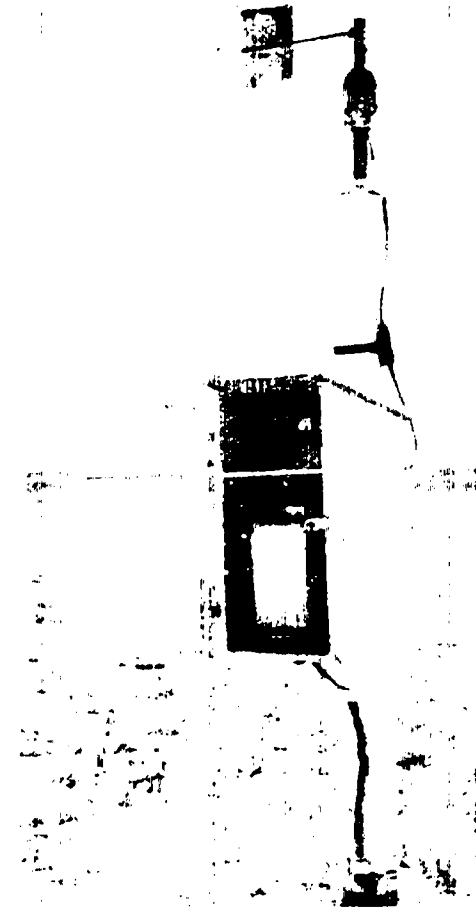

Figure 6.3 Azimuth wind-direction vane and recorder installation along base line of sulfur-dioxide sampling network.

wheels, manufactured by the Electric Speed Indicator Company, are 11.3 inches in diameter and weigh 370 grams. Individual cups are conically shaped and have beaded edges. The anemometer cases, manufactured by the H. J. Green Company, were modified by substituting powdered bronze bearings for the steel bearings and lightweight electrical contacts for the original contact assemblies. The two anemometers used during the Prairie Grass diffusion experiments were selected from a total of eleven similar instruments on the basis of extensive field-matching tests. Results of these tests indicated an average difference in calibration of about 0.25 percent, over a wide range of mean wind speeds, between the two instruments. After the first twenty experiments, the two anemometers were interchanged. Passage of each 1/60-mile of air was recorded on Esterline-Angus chart rolls (Type 4310E) by means of chronograph pens activated by electrical contacts in the bases of the anemometers. The relationship between mean wind speed $\overline{V}$ in m sec^{-1} and the average number of contacts per minute $\underline{N}$ is given by

$$V = 0.538 + 0.507\ N.$$

The wind direction instruments comprised airfoil-type vanes (later replaced by flat-plate types) rigidly connected to 360-degree potentiometers. The latter, purchased from the Technology Instrument Company (Type ST-20), were center-tapped and had an internal resistance of 5000 ohms. Data were recorded on portable Esterline-Angus center-zero milliammeters. Chart speed was set at 12 inches per minute and full-scale deflection represented an azimuth range of 200 degrees. The vanes were oriented so that the center of the recorder chart-rolls corresponded to a true wind direction of 180 degrees, the orientation of the center line of the sulfur-dioxide sampling network. Exact correspondence proved very difficult to achieve. Despite careful adjustments, subsequent data analysis indicates that the 450 m vane tended to read approximately 8 degrees too high; the absolute orientation of the base-line vane appears to be approximately correct.

Accessory electrical components included a Raytheon voltage-regulator transformer (Type VR-6111) and a 25-v rectifier power supply adjustable for any desired output within 14 to 25 volts. Critical damping was provided by a 1,250-ohm resistor in series with the galvanometer coil of the recorder. To ensure synchronous operation of the wind speed and wind direction instruments, both recorders were activated by a master switch located in the instrument truck at the northern end of the field site. An additional marking pen was used in the base-line recorder to provide information on the rate of release of the tracer. Wiring diagrams for this instrumentation are presented in Figures 6.4 and 6.5.

During the first 34 diffusion experiments, airfoil-type vanes were used to measure fluctuations in azimuth wind direction. These were constructed of balsa wood ribs covered with model airplane fabric. Due to repeated exposure to strong winds and light rain showers, the airfoils became asymmetrical; this deformation introduced an uncertainty of 3 to 6 degrees depending upon the wind speed, in the indicated mean wind direction. After Experiment No. 34 these airfoils were replaced with flat metal plates (see Figure 6.2). At the conclusion of the Prairie Grass field experiments, reduction of the data revealed the response of the potentiometers in the azimuth vanes was not linear over the 200-degree range; this occurred as a result of shunting effects in the galvanometer coils. Calibration curves for each vane assembly were subsequently determined in laboratory tests and these were used in evaluating the data abstracted from the chart rolls.

6.3 Data Abstraction and Analysis

The slow-response meteorological instrumentation was operated for 20-minute sampling periods centered on the midpoint of the 10-minute gas release. Values of mean wind speed, mean wind direction, and standard deviations of wind direction have been calculated both for the 20-minute sampling periods and for the 10-minute periods identified with the release of the tracer. The 10-minute observations at 450 m have been adjusted to correspond as closely as possible to the time that

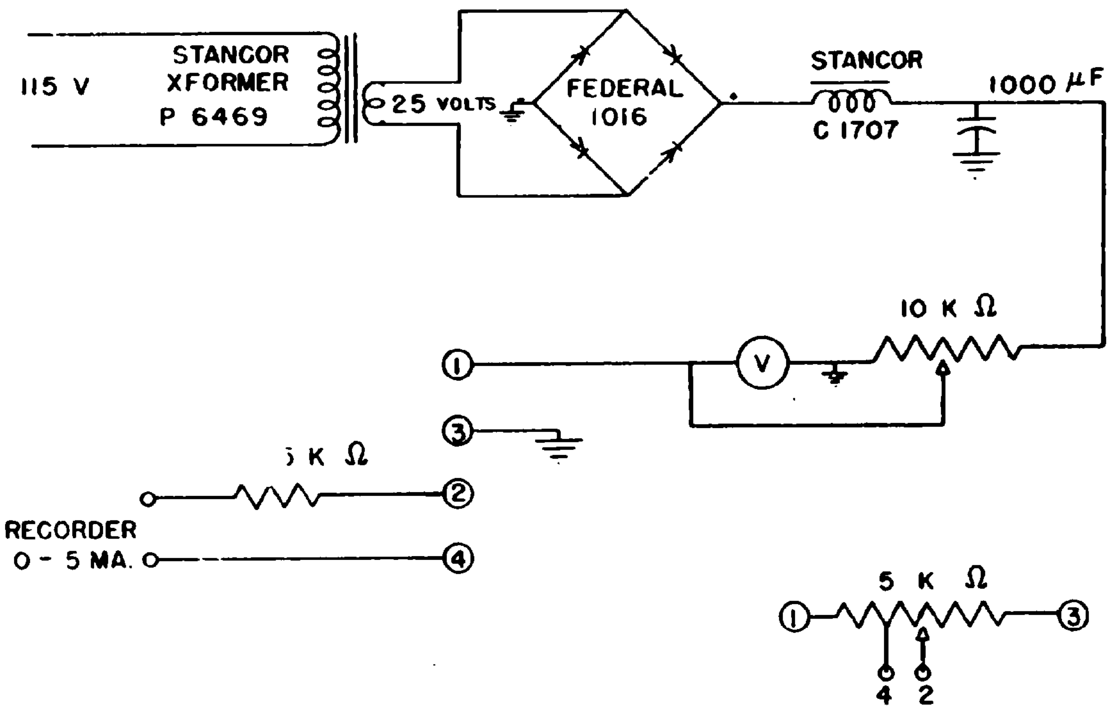

Figure 6.4 Wiring diagram for azimuth wind-direction assembly.

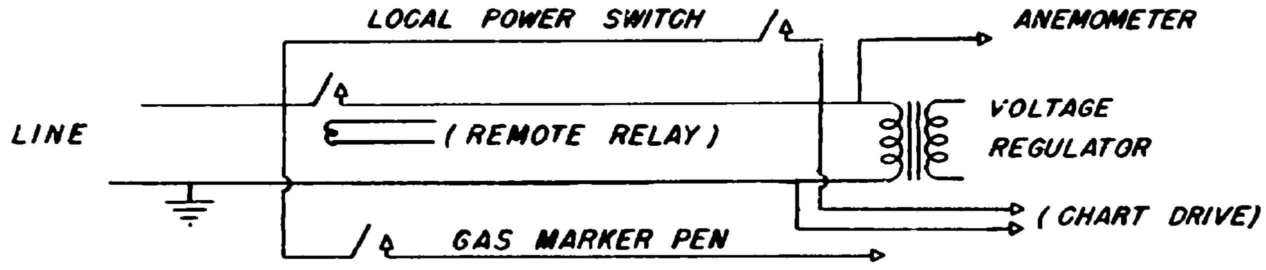

Figure 6.5 Wiring diagram for remote operation of recorders used in obtaining slow-response meteorological observations.

the tracer was actually present; this was accomplished by delaying the start of the 10-minute period by $450/\overline{V}$ sec, where $\overline{V}$ is the mean wind speed at the base line in m sec^{-1}. When $\overline{V}$ was less than 1.5 m sec^{-1}, the last 10 minutes of chart record at 450 m were utilized. Mean wind speed values were determined by substituting the average number of pips per minute, obtained from the chart records, in the calibration equation given above. Azimuth wind-direction data were abstracted from the charts at 2.5-sec intervals; these data were then grouped in 2-degree class intervals identified with the angular positions of sampling stations in the first four arcs of the sulfur-dioxide sampling network. The results comprise frequency distributions of azimuth wind direction for both 10- and 20-minute sampling periods.

Mean wind speeds, azimuth wind directions, and standard deviations of azimuth wind direction for both 10- and 20-minute sampling periods are summarized in Table 6.1. Frequency distributions of azimuth wind direction for both 10- and 20-minute periods are presented in Table 6.2. It is felt that the wind speed data are accurate to within 2 to 5 percent for mean wind speeds greater than 2.0 m sec^{-1}; for lower mean wind speeds, particularly during nighttime experiments in the presence of stable thermal stratification, the uncertainty is greatly increased (the starting speed of the anemometers is approximately 0.8 m sec^{-1}). The relative accuracy of the mean wind directions is thought to be of the order of 2 to 5 degrees; the absolute values obtained for wind direction, as noted above, may be in error by 10 degrees. Standard deviations of azimuth wind direction are considered accurate within 10 percent, except in the case of mean wind speeds below 2 m sec^{-1} where the uncertainty is considerably larger. In about 40 percent of the cases, the 20-minute standard deviation of azimuth wind direction is slightly lower than the 10-minute value; these small differences are not considered statistically significant. For the few cases in which the 20-minute standard deviations are more than 10 percent lower than the 10-minute values, inspection of the original chart records reveals the presence of long-period inhomogeneities in the turbulent structure.

REFERENCE

1. Cramer, H. E., G. C. Gill, and F. A. Record, "Standard Cup Anemometers - Massachusetts Institute of Technology" in "Exploring the Atmosphere's First Mile," Pergamon Press, N. Y., Vol. 1, 145-148, 1957.

Table 6.1

Summary of slow-response meteorological measurements made by the Massachusetts Insititute of Technology during the Project Prairie Grass diffusion experiments

Tabular entries comprise mean wind speeds (m sec^{-1}), mean wind directions (degree), and standard deviations of azimuth wind direction (degree); data are based on measurements made at height of 2 m along base line of sulfur-dioxide sampling network and at travel distance of 450 m from the release-point for the tracer. Results are presented for 10- and 20-minute sampling periods. With respect to the measurements made along the base line, the duration of the 10-minute period coincides with that of the gas release. At 450 m, the start of the 10-minute period was delayed by $450/\overline{V}$ sec, as explained in the text. Entries marked with asterisks are estimates based on incomplete records; these are explained below. Blank spaces signify missing data. It appears that the mean wind directions obtained from the 450-m vane are about 8 degrees too large; more reasonable values may be secured by subtracting this amount from each of the tabular entries.

Explanation of incomplete or missing data

Experiment No.	Explanation
1	No wind direction data and no wind speed data for 450 m. First 5 min of record at base line missing; portions of remainder of record on slow speed.
2	No wind direction data available.
3	No slow-response data - light, variable winds.
6	Base-line chart records missing.
25	Last 9 1/2 min of chart record missing at 450 m.
27	Last 2 1/2 min of chart record missing at 450 m.
29	No data available at 450 m.
36	Last 4 min of record missing at base line.
40	First 5 min of wind speed record at 450 m is missing.
48S	No wind direction data presented - off scale.
52	No wind direction data at 450 m - off scale.
58	First 3-1/2 min of record during gas release missing from base-line chart.
63, 64	No slow-response data available - light, variable winds.

Table 6.1 (Continued)

Gas release No.	1	2	3	4	5	6	7
Date	3 July		5 July	6 July			10 July
Time (CST)	1055	1455	2155	0055	1355	1655	1355
Wind speed (m/sec)							
Source (10 min)	2.62*	2.01		1.40	6.47		4.19
450 m (10 min)		2.57		1.65	5.96	5.86	4.14
Source (20 min)	2.40*	2.14		1.58	6.57		4.19
450 m (20 min)		2.19		1.76	6.45	6.65	4.55
Wind direction (deg)							
Source (10 min)				216	176		188
450 m (10 min)				223	186	191	194
Source (20 min)				207	176		197
450 m (20 min)				226	184	190	200
Standard deviation of wind direction (deg)							
Source (10 min)				7.4	9.5		25.6
450 m (10 min)				7.6	9.1	7.1	27.1
Source (20 min)				9.7	11.1		31.7
450 m (20 min)				9.2	9.7	7.7	23.9

Gas release No.	8	9	10	11	12	13	14
Date	10 July	11 July		14 July		22 July	
Time (CST)	1655	0955	1155	0755	0955	1955	2155
Wind speed (m/sec)							
Source (10 min)	4.85	6.88	4.60	7.03	8.35	1.25	1.91
450 m (10 min)	4.75	7.13	4.65	7.74	8.25	1.81	1.81
Source (20 min)	4.70	6.83	4.52	7.61	8.07	1.37	1.75
450 m (20 min)	4.80	7.13	4.65	7.76	8.14	1.65	1.81
Wind direction (deg)							
Source (10 min)	184	204	225	184	194	190	170
450 m (10 min)	193	214	214	196	200	206	186
Source (20 min)	176	206	217	185	192	192	172
450 m (20 min)	181	214	217	196	199	206	186
Standard deviation of wind direction (deg)							
Source (10 min)	10.2	10.2	16.8	7.2	7.9	3.2	3.6
450 m (10 min)	9.6	10.2	14.1	6.8	5.1	2.4	3.1
Source (20 min)	16.3	9.5	18.3	6.9	9.9	5.0	4.3
450 m (20 min)	10.1	9.1	15.4	6.7	6.9	2.5	5.9

Table 6.1 (Continued)

Gas release No.	15	16	17	18	19	20	21
Date	23 July				25 July		
Time (CST)	0755	0955	1955	2155	1055	1255	2155
Wind speed (m/sec)							
Source (10 min)	3.43	3.23	3.33	3.53	5.81	8.60	6.12
450 m (10 min)	3.43	3.28	3.48	3.43	5.76	8.35	5.76
Source (20 min)	3.25	3.02	3.33	3.45	5.81	8.52	5.53
450 m (20 min)	3.40	3.12	3.48	3.50	5.79	8.42	5.73
Wind direction (deg)							
Source (10 min)	209	192	184	187	166	178	181
450 m (10 min)	211	216	188	195	174	184	186
Source (20 min)	209	201	182	189	166	177	179
450 m (20 min)	212	212	186	196	174	183	185
Standard deviation of wind direction (deg)							
Source (10 min)	12.8	18.5	5.6	5.3	11.6	8.3	6.6
450 m (10 min)	11.0	18.9	5.2	4.7	10.1	7.9	5.7
Source (20 min)	12.4	23.4	5.5	5.7	12.4	8.3	6.2
450 m (20 min)	9.6	18.7	5.4	4.0	9.5	8.2	5.9

Gas release No.	22	23	24	25	26	27	28
Date	25 July	29 July		1 Aug.	2 Aug.		
Time (CST)	2355	2055	2255	1255	1155	1355	2355
Wind speed (m/sec)							
Source (10 min)	6.42	5.01	6.22	2.77	6.77	6.57	2.62
450 m (10 min)	6.78	6.27	5.76	2.92*	6.57	6.57	2.62
Source (20 min)	6.67	6.12	5.91	2.90	6.37	6.67	2.77
450 m (20 min)	6.82	6.22	5.81	2.91*	6.29	6.39*	2.67
Wind direction (deg)							
Source (10 min)	176	128	141	177	199	184	174
450 m (10 min)	184	134	150	188*	197	190	183
Source (20 min)	176	128	141	176	186	185	174
450 m (20 min)	184	133	150	187*	192	190*	181
Standard deviation of wind direction (deg)							
Source (10 min)	5.8	7.3	7.1	24.8	13.2	9.2	6.4
450 m (10 min)	5.1	5.2	6.2	16.0*	10.2	8.6	5.9
Source (20 min)	5.6	7.2	6.4	21.4	12.1	9.2	6.0
450 m (20 min)	4.7	5.5	6.2	15.5*	11.2	8.5*	5.3

Table 6.1 (Continued)

Gas release No.	29	30	31	32	33	34	35S
Date	3 Aug.			6 Aug.	7 Aug.		
Time (CST)	0155	1255	1455	1955	1255	1455	2257
Wind speed (m/sec)							
Scurce (10 min)	3.48	6.82	7.33	2.21	8.50	9.00	4.04
450 m (10 min)		6.72	7.43	2.01	8.30	9.26	3.99
Source (20 min)	3.68	6.65	7.64	2.10	7.89	8.30	3.99
450 m (20 min)		6.55	7.76	2.24	7.99	9.36	3.91
Wind direction (deg)							
Source (10 min)	220	196	225	171	181	146	135
450 m (10 min)		209	223	185	190	161	150
Source (20 min)	222	201	216	170	179	145	136
450 m (20 min)		211	221	185	189	156	149
Standard deviation of wind direction (deg)							
Source (10 min)	8.0	10.3	10.9	3.6	10.5	7.3	5.0
450 m (10 min)		11.5	7.7	5.8	9.0	8.7	5.4
Source (20 min)	12.7	12.3	14.2	5.2	9.2	7.5	6.4
450 m (20 min)		10.8	10.7	3.4	8.9	9.6	5.9

Gas release No.	35	36	37	38	39	40	41
Date	11 Aug.		12 Aug.		13 Aug.	14 Aug.	
Time (CST)	2125	2325	0255	0455	2225	0025	0255
Wind speed (m/sec)							
Source (10 min)	1.86	1.86	4.64	4.14	3.12	3.08	4.04
450 m (10 min)	1.75	2.06	4.70	4.49	2.21	2.36	4.19
Source (20 min)	1.86	1.87*	4.57	4.09	3.10	3.15	4.06
450 m (20 min)	1.65	1.88	4.62	4.39	2.46	2.45*	4.09
Wind direction (deg)							
Source (10 min)	132	160	187	170	140	180	198
450 m (10 min)	105	169	190	175	131	188	201
Source (20 min)	131	158*	186	170	139	179	198
450 m (20 min)	109	167	190	175	133	182	201
Standard deviation of wind direction (deg)							
Source (10 min)	3.3	3.8	7.0	5.0	5.8	9.0	5.0
450 m (10 min)	5.1	4.2	7.0	4.6	6.8	10.4	4.5
Source (20 min)	3.6	4.2*	6.8	5.6	8.8	10.5	5.0
450 m (20 min)	7.1	4.4	6.6	4.7	6.7	11.8	4.7

Table 6.1 (Continued)

Gas release No.	42	43	44	45	46	47	48S
Date	14 Aug.	15 Aug.				20 Aug.	
Time (CST)	0455	1155	1355	1655	1840	0955	1225
Wind speed (m/sec)							
Source (10 min)	5.81	4.95	5.71	6.12	5.15	3.58	3.38
450 m (10 min)	6.88	5.10	6.01	6.12	5.26	3.58	2.41
Source (20 min)	5.90	4.95	5.71	5.66	5.20	3.45	3.17
450 m (20 min)	6.32	5.05	6.14	5.89	5.38	3.48	2.90
Wind direction (deg)							
Source (10 min)	212	170	158	163	134	243	
450 m (10 min)	215	179	167	168	133	225	
Source (20 min)	212	170	158	161	134	236	
450 m (20 min)	215	177	161	167	135	235	
Standard deviation of wind direction (deg)							
Source (10 min)	6.6	12.2	12.7	6.9	7.7	13.9	
450 m (10 min)	5.9	10.3	14.0	7.2	8.2	12.6	
Source (20 min)	6.6	13.7	13.7	8.2	7.6	20.0	
450 m (20 min)	5.3	11.7	18.1	8.4	8.6	18.0	

Gas release No.	48	49	50	51	52	53	54
Date	21 Aug.				24 Aug.		
Time (CST)	0855	1055	1355	1525	1110	1955	2155
Wind speed (m/sec)							
Source (10 min)	8.04	6.27	6.57	6.12	4.29	2.51	4.04
450 m (10 min)	8.55	6.67	6.78	6.67	4.75	2.41	4.04
Source (20 min)	7.94	6.39	6.47	5.96	4.32	2.46	4.11
450 m (20 min)	8.40	6.85	6.77	6.77	4.75	2.39	4.06
Wind direction (deg)							
Source (10 min)	214	199	215	245	132	132	140
450 m (10 min)	213	202	214	237		131	142
Source (20 min)	212	198	216	244	129	133	140
450 m (20 min)	213	201	217	243		132	143
Standard deviation of wind direction (deg)							
Source (10 min)	8.1	11.9	10.9	10.8	17.7	3.9	5.9
450 m (10 min)	6.9	10.9	9.0	11.4		2.5	6.1
Source (20 min)	8.1	11.1	10.7	12.6	16.5	3.6	5.7
450 m (20 min)	6.7	10.9	10.4	12.5		2.7	5.8

Table 6.1 (Continued)

Gas release No.	55	56	57	58	59	60	61
Date	25 Aug.					26 Aug.	
Time (CST)	0055	0255	1725	1925	2225	0135	1055
Wind speed (m/sec)							
Source (10 min)	5.41	4.34	6.67	1.91*	2.62	4.90	7.99
450 m (10 min)	5.86	4.75	6.82	2.36	2.67	5.00	7.64
Source (20 min)	5.28	4.44	6.90	1.96*	2.62	4.87	7.64
450 m (20 min)	5.94	4.70	6.98	2.39	2.72	4.87	7.61
Wind direction (deg)							
Source (10 min)	156	153	200	178*	174	198	203
450 m (10 min)	162	156	206	185	181	202	204
Source (20 min)	155	152	198	179*	173	199	206
450 m (20 min)	162	154	205	186	180	202	209
Standard deviation of wind direction (deg)							
Source (10 min)	5.8	6.1	8.0	4.1*	5.2	5.9	11.0
450 m (10 min)	6.0	7.2	7.8	3.3	3.6	6.5	9.0
Source (20 min)	6.1	7.8	8.2	4.1*	4.6	5.5	10.9
450 m (20 min)	5.5	8.6	8.1	3.3	3.5	5.3	9.5
Gas release No.	62			65	66	67	68
Date	26 Aug.			29 Aug.		30 Aug.	
Time (CST)	1355			1925	2125	0025	0225
Wind speed (m/sec)							
Source (10 min)	5.15			4.44	3.08	4.34	2.82
450 m (10 min)	5.41			4.44	3.33	4.70	2.77
Source (20 min)	5.00			4.24	3.17	4.42	2.82
450 m (20 min)	5.30			4.37	3.43	4.67	2.95
Wind direction (deg)							
Source (10 min)	212			178	166	185	174
450 m (10 min)	214			174	171	190	181
Source (20 min)	213			173	165	182	173
450 m (20 min)	215			177	172	187	179
Standard deviation of wind direction (deg)							
Source (10 min)	8.8			5.0	6.9	5.4	5.3
450 m (10 min)	6.9			5.4	5.1	5.2	5.3
Source (20 min)	9.4			5.4	6.4	6.8	6.2
450 m (20 min)	7.6			4.8	5.0	6.2	5.9

Table 6.2

Frequency distributions of azimuth wind direction obtained by the Massachusetts Institute of Technology during Project Prairie Grass diffusion experiments

Frequency distributions of azimuth wind direction are based on measurements at height of 2 m along base line of sampling network and at travel distance of 450 meters. Data were read from chart records at intervals of 2.5 seconds; entries are total number of cases occurring within 2-degree class intervals expressed in terms of post numbers for horizontal sampling network. For example, Post No. 1 includes wind directions from 089 to 090 degrees; Post No. 46 includes wind directions from 179 to 180 degrees; Post No. 91 includes wind directions from 269 to 270 degrees. Selection of 10-minute sampling periods is explained in the text. As noted in the text and in the explanatory material for Table 6.1, the 450-m data should probably be shifted about 8 degrees or four post numbers towards lower values. Explanation of incomplete or missing data is presented in Table 6.1.

Explanation of incomplete or missing data

Gas Release No.

1,2,3	No wind direction data are available.
6	No wind direction data for the source.
25	No frequency distributions at 450 m - short record.
27	Last 2-1/2 min of chart record at 450 m is missing.
29	No frequency distributions at 450 m - short record.
36	20-min frequency distribution at source is based on 16 min of record (last 4 min missing).
52	No wind direction data available at 450 m - off scale.

Gas Release No.

58	Wind direction distributions at source are based on 16-1/2 min of record - 3-1/2 min missing at start of gas release.
63,64	No frequency distributions presented - light and variable winds.

Table 6.2 (Continued)

DATE 6 July 1956 TIME 0055-0115 CST RUN NO. 4

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47			1	
2					48				
3					49				
4					50				
5					51			3	
6					52			13	
7					53			27	
8					54			23	
9					55			32	
10					56	2		44	
11					57	8		35	
12					58	18	2	49	2
13					59	9	1	24	1
14					60	29	3	45	3
15					61	10	6	14	6
16					62	21	4	22	4
17					63	9	41	11	41
18					64	16	10	17	14
19					65	14	7	15	30
20					66	19	32	19	52
21					67	54	30	54	42
22					68	25	14	25	35
23					69	5	6	5	32
24					70		29		55
25					71		12		12
26					72		14		26
27					73		21		30
28					74		9		26
29					75				17
30					76				10
31					77				4
32					78				4
33					79				32
[illegible]					80				2
[illegible]					81				
[illegible]					82				
[illegible]					83				
[illegible]					84				
[illegible]					85				
[illegible]					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 6 July 1956 TIME 1355-1415 CST RUN NO. 5

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	23	21	39	42
2					48	17	18	29	22
3					49	19	24	27	45
4					50	13	13	26	30
5					51	6	18	12	28
6					52	9	16	12	32
7					53	1	11	7	18
8					54	4	15	6	27
9					55	1	8	3	15
10					56	1	6	3	9
11					57		5	1	8
12					58		5	1	6
13					59		2		2
14					60		2		2
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29	1				75				
30			1		76				
31	1		3		77				
32			5	2	78				
33	1		11		79				
34	2		8	5	80				
35	4		20	1	81				
36	4		9	1	82				
37	9		21	2	83				
38	8		18	4	84				
39	5	4	19	5	85				
40	6	2	18	5	86				
41	10	6	32	11	87				
42	24	8	47	16	88				
43	14	8	18	21	89				
44	15	16	22	26	90				
45	18	20	31	41	91				
46	25	18	36	43					

Table 6.2 (Continued)

DATE 6 July 1956 TIME 1655-1715 CST RUN NO. 6

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47		24		48
2					48		14		31
3					49		23		46
4					50		14		35
5					51		26		45
6					52		22		49
7					53		29		45
8					54		25		42
9					55		19		27
10					56		7		24
11					57		9		13
12					58		3		6
13					59		4		4
14					60		1		6
15					61		1		1
16					62				
17					63				1
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40				3	86				
41					87				
42				1	88				
43		2		10	89				
44		3		9	90				
45		5		11	91				
46		9		18					

Table 6.2 (Continued)

DATE 10 July 1956 TIME 1355-1415 CST RUN NO. 7

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	17	6	24	5
2					48	9	3	12	11
3					49	6	11	14	15
4					50	6	4	16	9
5					51	3	6	7	8
6					52	4	8	9	12
7					53	3	2	10	9
8					54	5	6	7	9
9					55	9	4	12	11
10					56	7	7	10	16
11					57	5	9	9	16
12					58	9	11	12	24
13					59	5	8	12	14
14					60	7	8	14	24
15					61	4	5	7	18
16					62	8	8	11	20
17					63	6	14	10	35
18					64	3	7	8	17
19		1		1	65	4	3	7	10
20	1		1		66	13	2	21	6
21	1	3	1	3	67	6	2	13	14
22	1		1		68	2	4	9	13
23	4	2	4	2	69	2	6	6	18
24	2	3	2	3	70	2	5	4	13
25	1	1	1	1	71	3	7	5	12
26	2	1	2	1	72	2	4	2	9
27	2	3	2	3	73	1	5	1	6
28	2	1	2	1	74	1		3	1
29	2	1	3	1	75	1	1	3	1
30	4	1	5	2	76		1		1
31	2	4	7	4	77	1	2	4	2
32	1	5	4	6	78		1	2	1
33	2	2	9	2	79		3	2	3
34	2	1	5	1	80			1	
35	4	1	8	2	81			3	
36	1	1	7	1	82		1	5	1
37	6	2	13	3	83				
38	4	5	9	8	84			4	
39	6	1	8	5	85			4	
40	1	4	2	7	86			8	
41	6		11	2	87			1	
42	11	4	13	9	88			6	
43	4	4	5	7	89			3	
44	8	7	10	11	90			3	
45	6	4	8	7	91			4	
46	3	3	8	3					

Table 6.2 (Continued)

DATE 10 July 1956 TIME 1655-1715 CST RUN NO. 8

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	23	12	46	22
2					48	13	15	25	22
3					49	27	9	32	15
4					50	15	8	26	18
5					51	14	13	25	23
6					52	14	17	15	32
7					53	10	15	19	19
8					54	8	16	13	22
9					55	3	32	6	37
10					56	8	14	7	17
11					57		20	4	24
12					58	2	20	1	21
13					59	2	6	1	7
14					60		6	1	6
15					61	2	2	2	2
16					62		1		1
17					63	2		2	
18				1	64				
19				2	65				
20			1		66				
21			1		67				
22			1	5	68				
23			5	1	69				
24			3	1	70				
25			1	7	71				
26			5	5	72				
27			6	2	73				
28			6	5	74				
29			4	9	75				
30			8	6	76				
31			11	7	77				
32	1		11	6	78				
33			8	2	79				
34			6	9	80				
35	1		9	5	81				
36			3	8	82				
37	1		8	8	83				
38	2		7	10	84				
39	4	1	7	1	85				
40	3	1	3	10	86				
41	13		21	7	87				
42	21	2	32	4	88				
43	11	1	18	14	89				
44	15	9	28	21	90				
45	10	10	18	11	91				
46	16	10	23	24					

Table 6.2 (Continued)

DATE 11 July 1956 TIME 0955-1015 CST RUN NO. 9

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	1		1	
2					48	4		4	
3					49	2	1	4	1
4					50	4		5	
5					51	7	1	9	1
6					52	7	4	12	4
7					53	17		26	1
8					54	15	5	19	5
9					55	15	6	20	6
10					56	18	6	27	7
11					57	15	17	35	28
12					58	28	17	61	30
13					59	29	13	47	28
14					60	14	8	42	34
15					61	9	7	24	27
16					62	13	19	36	40
17					63	5	28	16	63
18					64	5	14	19	24
19					65	5	14	21	26
20					66	5	15	13	31
21					67	6	9	11	19
22					68	7	22	12	38
23					69	3	10	5	13
24					70	5	8	7	14
25					71		11	1	21
26					72		4		8
27					73		1		4
28					74	1		1	
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46	1		1						

Table 6.2 (Continued)

DATE 11 July 1956 TIME 1155-1215 CST RUN NO. 10

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47		2	3	3
2					48	1	3	6	4
3					49	2	2	8	2
4					50	3	2	9	2
5					51	5	6	13	10
6					52		3	7	7
7					53	6	5	12	9
8					54	3	5	12	8
9					55	4	3	13	7
10					56	7	11	14	11
11					57	2	8	13	17
12					58	3	9	11	15
13					59	4	9	11	12
14					60	7	12	19	22
15					61	3	14	14	18
16					62	8	13	16	29
17					63	7	19	14	33
18					64	6	18	19	27
19					65	7	11	21	25
20					66	8	9	22	23
21					67	8	8	16	24
22					68	12	10	23	31
23					69	17	9	28	21
24					70	13	10	23	20
25					71	11	8	13	13
26					72	15	7	18	18
27					73	6	4	7	8
28					74	16	2	19	6
29					75	9	7	9	10
30					76	6	6	6	7
31					77	12	5	13	8
32					78	8		9	1
33					79	4	1	6	5
34					80	2		3	1
35					81	8		8	1
36					82	2		6	2
37					83	2		2	
38			1		84	2		2	7
39			1		85				1
40					86	1		1	4
41					87				
42					88	1		1	
43					89				
44			1		90				1
45			2		91				
46		1	3	1					

Table 6.2 (Continued)

DATE 14 July 1956 TIME 0755-0815 CST RUN NO. 11

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	26	3	63	7
2					48	21	9	50	16
3					49	23	10	52	24
4					50	23	7	45	26
5					51	16	22	32	44
6					52	22	25	33	49
7					53	13	26	28	53
8					54	6	18	12	44
9					55	3	35	16	60
10					56	3	17	6	38
11					57	1	24	1	36
12					58		16		29
13					59		15		24
14					60		9		16
15					61		2		4
16					62				2
17					63		1		2
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40			1		86				
41	5		5		87				
42	14		20		88				
43	6		15		89				
44	16		28		90				
45	19	1	29	1	91				
46	24		42	2					

Table 6.2 (Continued)

DATE 14 July 1956 TIME 0955-1015 CST RUN NO. 12

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	8		33	6
2					48	12		26	4
3					49	9		23	4
4					50	14	1	23	9
5					51	25	10	41	21
6					52	31	9	42	26
7					53	11	24	28	46
8					54	29	27	41	44
9					55	17	32	26	63
10					56	19	37	30	58
11					57	21	36	28	53
12					58	18	31	26	56
13					59	4	17	7	30
14					60	4	8	17	14
15					61	3	4	2	17
16					62	2	2	6	11
17					63		2	2	9
18					64			1	
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38			1		84				
39			1		85				
40			1		86				
41	2		5		87				
42			7		88				
43	1		6		89				
44	4		17		90				
45	3		19	4	91				
46	4		17	4					

Table 6.2 (Continued)

DATE 22 July 1956 TIME 1955-2015 CST RUN NO. 13

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47				
2					48			1	
3					49	18		46	
4					50	74		80	
5					51	67		162	
6					52	21		56	
7					53	34		43	
8					54	26		35	2
9					55			10	5
10					56			12	9
11					57		38	4	49
12					58		81	23	114
13					59		74	9	179
14					60		22	6	82
15					61		19		41
16					62		6		4
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 22 July 1956 TIME 2155-2215 CST RUN NO. 14

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47		22	13	44
2					48		67	2	82
3					49		68		75
4					50		46		53
5					51		19		33
6					52		7		17
7					53		4		21
8					54		1		24
9					55				14
10					56				6
11					57				4
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36	1		1		82				
37	1		1		83				
38	19		22		84				
39	39		55		85				
40	33		52		86				
41	55		97		87				
42	49		110		88				
43	28		42		89				
44	14		46	2	90				
45			23	57	91				
46	1	6	15	47					

Table 6.2 (Continued)

DATE 23 July 1956 TIME 1755-1815 CST RUN NO. 15

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	7		12	
2					48	4	1	8	1
3					49	1	2	3	3
4					50	5	3	7	3
5					51	3	4	9	5
6					52	3	9	13	10
7					53	3	6	9	10
8					54	5	9	16	9
9					55	2	9	12	7
10					56	5	9	8	31
11					57	8	5	15	36
12					58	5	8	27	30
13					59	13	4	31	43
14					60	25	28	45	37
15					61	12	11	27	27
16					62	18	13	39	55
17					63	15	23	26	30
18					64	15	15	31	28
19					65	16	15	29	15
20					66	15	13	27	20
21					67	16	17	21	29
22					68	7	16	12	18
23					69	17	12	19	12
24					70	11	3	15	8
25					71	1	2	3	8
26					72	1	1	3	2
27					73	1		1	
28					74				
29					75	1	1	1	
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42	1		1		88				
43			1		89				
44	1		2		90				
45	3		4		91				
46		1	2	1					

Table 6.2 (Continued)

DATE 23 July 1956 TIME 0955-1015 CST RUN NO. 16

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	12	1	18	13
2					48	8	2	12	5
3					49	12	1	16	12
4					50	15	3	22	6
5					51	13		17	6
6					52	14	8	19	11
7					53	11	4	13	7
8					54	10	6	15	13
9					55	7	3	12	6
10					56	4	3	8	7
11					57	3	11	3	16
12					58	3	10	9	18
13					59	4	4	10	5
14					60	8	15	14	28
15					61		12	3	17
16					62	3	12	8	20
17					63		13	5	37
18					64	4	3	11	16
19					65	10	17	18	29
20					66	12	13	22	17
21					67	9	11	19	26
22					68	5	14	15	28
23					69	4	5	14	17
24					70		7	12	20
25					71		5	6	7
26					72	1	6	11	10
27					73	1	11	4	11
28					74	1	3	2	3
29					75		4	5	4
30					76		1	7	1
31		1	2	1	77		2	2	2
32			1		78		2	11	3
33			1		79		3	3	5
34	1		1		80		2	2	2
35	1		2		81			2	1
36	3		3		82		1	3	2
37	4	1	5	1	83				
38	4	1	4	1	84		2		3
39	5		5		85			1	
40	6	2	9	2	86		3		3
41	13	1	15	2	87				
42	4	1	10	1	88		1		1
43	6	3	8	6	89		2		2
44	5	1	12	4	90				
45	6		7	6	91				
46	8	3	19	6					

Table 6.2 (Continued)

DATE 23 July 1956 TIME 1955-2015 CST RUN NO. 17

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	46	23	90	60
2					48	36	33	68	67
3					49	26	41	39	84
4					50	24	37	35	59
5					51	17	34	26	49
6					52	8	20	13	39
7					53	7	22	8	31
8					54	4	7	4	12
9					55	2	5	2	8
10					56				
11					57		2		4
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38	1		2		84				
39			2		85				
40					86				
41	2		9	3	87				
42	4	1	12	1	88				
43	6	2	18	7	89				
44	13	2	41	9	90				
45	13	5	47	17	91				
46	31	6	63	29					

Table 6.2 (Continued)

DATE 23 July 1956 TIME 1955-2015 CST RUN NO. 18

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	28		41	
2					48	25		42	1
3					49	31	7	60	12
4					50	32	13	59	22
5					51	38	19	64	31
6					52	25	32	51	58
7					53	17	36	45	68
8					54	8	48	29	77
9					55	7	30	39	72
10					56	1	19	11	43
11					57		27	2	50
12					58		7	4	26
13					59				8
14					60		2		10
15					61			1	
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44	4		4		90				
45	6		7		91				
46	18		20						

Table 6.2 (Continued)

DATE 25 July 1956 TIME 1055-1115 CST RUN NO. 19

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	13	13	18	43
2					48	8	6	13	16
3					49	3	7	11	20
4					50	6	8	10	17
5					51	1	4	3	10
6					52	1	3	1	4
7					53	1		1	
8					54		2		2
9					55		1		1
10					56	1		1	
11					57				
12					58		2		2
13					59				
14					60		1		1
15					61				
16					62				
17					63				
18					64				
19			1		65				
20					66				
21			2		67				
22					68				
23			1		69				
24			3		70				
25					71				
26	1		7		72				
27	1		3	1	73				
28	2		8		74				
29	3		7	1	75				
30	10		13	3	76				
31	6	4	13	7	77				
32	12	3	20	5	78				
33	4	1	11	2	79				
34	14	2	18	6	80				
35	17	8	26	8	81				
36	12	2	24	5	82				
37	25	11	31	15	83				
38	5	13	20	21	84				
39	26	7	41	7	85				
40	7	18	23	32	86				
41	8	30	27	48	87				
42	13	14	45	32	88				
43	11	22	17	48	89				
44	15	21	33	39	90				
45	9	23	16	51	91				
46	6	14	11	33					

Table 6.2 (Continued)

DATE 25 July 1956 TIME 1255-1315 CST RUN NO. 20

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	19	34	39	56
2					48	16	18	22	33
3					49	11	17	21	50
4					50	7	18	15	29
5					51	8	16	11	30
6					52	5	14	12	24
7					53	3	11	6	17
8					54	2	12	4	21
9					55	4	7	5	8
10					56	1	3	2	4
11					57				4
12					58	1		1	6
13					59	1		2	
14					60				1
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35			5		81				
36	1		3	1	82				
37	1	1	8	1	83				
38	1	1	13	2	84				
39	15	4	30	7	85				
40	7	2	15	7	86				
41	19	6	38	12	87				
42	19	2	50	17	88				
43	17	11	19	27	89				
44	33	12	63	27	90				
45	24	25	54	55	91				
46	25	25	42	41					

Table 6.2 (Continued)

DATE 25 July 1956 TIME 2156-2215 CST RUN NO. 21

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	30	25	55	70
2					48	23	28	33	55
3					49	24	47	33	74
4					50	18	28	24	48
5					51	4	31	5	48
6					52	7	19	8	28
7					53	6	12	7	20
8					54	1	5	1	9
9					55	1	4	1	5
10					56		1		1
11					57	1	1	1	1
12					58		2		2
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35			2		81				
36					82				
37	1		4		83				
38	1		2		84				
39	3		7	1	85				
40	2		4	2	86				
41	11		19	1	87				
42	11	2	33	10	88				
43	12	5	36	14	89				
44	27	6	88	14	90				
45	31	10	61	34	91				
46	26	14	55	43					

Table 6.2 (Continued)

DATE 25 July 1956 TIME 2355-0015 CST RUN NO. 22

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	23	37	53	75
2					48	17	32	29	78
3					49	4	43	13	97
4					50	3	24	9	42
5					51	1	27	1	40
6					52	1	9	2	12
7					53		5		7
8					54		3		3
9					55				
10					56				
11					57				
12					58		1		1
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36	1		1		82				
37			3		83				
38	6		7		84				
39	6		13		85				
40	12	1	20	1	86				
41	21	1	41	1	87				
42	35		62	4	88				
43	14	3	27	10	89				
44	41	8	81	15	90				
45	24	26	57	52	91				
46	31	20	60	40					

Table 6.2 (Continued)

DATE 29 July 1956 · TIME 2055-2115 CST RUN NO. 23

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8			1		54				
9					55				
10					56				
11	1		4		57				
12	2		3		58				
13	2		5		59				
14	8		16	1	60				
15	3		8	1	61				
16	31	1	51	5	62				
17	13	1	22	4	63				
18	24	6	50	21	64				
19	29	12	56	30	65				
20	32	9	73	18	66				
21	27	17	53	59	67				
22	16	55	24	99	68				
23	20	32	49	50	69				
24	11	44	16	74	70				
25	1	31	7	55	71				
26	7	11	12	17	72				
27	5	11	13	19	73				
28	4	3	5	7	74				
29		4		8	75				
30	2		3		76				
31			1	1	77				
32	1	1	1	1	78				
33					79				
34	1	1	1	1	80				
35		1		1	81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 29 July 1956 TIME 2255-2315 CST RUN NO. 24

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19	1		4		65				
20	9		13		66				
21	11		20	1	67				
22	7		11	1	68				
23	25	1	40	2	69				
24	27	2	51	4	70				
25	14	5	28	6	71				
26	31	8	69	14	72				
27	22	17	61	36	73				
28	31	10	62	23	74				
29	15	23	24	52	75				
30	15	39	40	63	76				
31	12	36	17	73	77				
32	9	32	13	62	78				
33	3	11	4	25	79				
34	4	23	6	48	80				
35	1	17	2	36	81				
36	2	6	2	11	82				
37		6		9	83				
38		1		5	84				
39		1		5	85				
40				2	86				
41		1		1	87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 1 August 1956 TIME 1255-1315 CST RUN NO. 25

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	4		19	
2					48	4		17	
3					49	6		15	
4					50	2		9	
5					51	6		16	
6					52	3		9	
7					53	7		10	
8					54	4		5	
9					55	4		9	
10					56	9		10	
11					57	2		4	
12					58	17		19	
13					59	6		8	
14					60	9		14	
15					61	5		7	
16					62	5		6	
17	2		2		63	9		11	
18					64	3		6	
19					65				
20	1		1		66	1		3	
21	3		3		67				
22	1		2		68	1		1	
23	2		3		69				
24	4		4		70				
25	2		2		71				
26	2		3		72				
27	1		1		73				
28	8		11		74				
29	4		8		75				
30	5		8		76				
31	5		10		77				
32	5		14		78				
33	6		13		79				
34	1		5		80				
35	11		18		81				
36	6		10		82				
37	9		21		83				
38	8		19		84				
39	4		9		85				
40	3		21		86				
41	9		24		87				
42	10		20		88				
43	6		16		89				
44	7		15		90				
45	6		10		91				
46	1		8						

Table 6.3 (Continued)

DATE 2 August 1956 TIME 1155-1215 CST RUN NO. 26

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	17	10	36	29
2					48	8	5	17	21
3					49	11	11	26	38
4					50	19	7	46	29
5					51	12	23	28	39
6					52	17	15	35	30
7					53	12	17	25	29
8					54	12	24	20	36
9					55	9	16	15	22
10					56	8	9	13	17
11					57	8	14	8	18
12					58	11	21	14	26
13					59	5	11	5	13
14					60	3	17	4	21
15					61	3	3	3	4
16					62	3	8	3	11
17					63	4	5	4	6
18					64		5		6
19					65	4	2	4	4
20					66	4	1	4	1
21					67	2		2	
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34			1		80				
35			1		81				
36	2		3	1	82				
37			1		83				
38			5	1	84				
39	4		8		85				
40	4	1	8	4	86				
41	7		18	2	87				
42	6	1	25	12	88				
43	6	1	17	11	89				
44	15	1	35	7	90				
45	14	4	27	17	91				
46	10	8	18	24					

Table 6.2 (Continued)

DATE 2 August 1956 TIME 1355-1415 CST RUN NO. 27

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	24	22	52	36
2					48	17	25	38	38
3					49	24	18	34	41
4					50	22	18	37	34
5					51	16	12	37	25
6					52	17	21	32	37
7					53	14	18	26	25
8					54	9	22	21	34
9					55	5	14	14	23
10					56	4	9	9	13
11					57	5	13	8	24
12					58	2	5	3	11
13					59	1	6	3	7
14					60		6	4	7
15					61	1		3	2
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35	1		1		81				
36	1		1		82				
37	2		2		83				
38	2		3		84				
39	3		5		85				
40	2	1	5	1	86				
41	6	1	10	3	87				
42	12	2	21	4	88				
43	13	6	14	12	89				
44	13	3	36	5	90				
45	8	4	25	13	91				
46	16	14	35	22					

Table 6.2 (Continued)

DATE 2 August 1956 TIME 1255 0015 CST RUN NO. 28

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	19	42	31	79
2					48	11	19	19	41
3					49	5	33	9	60
4					50	3	21	4	34
5					51	1	13	1	15
6					52	1	8	2	11
7					53		7		7
8					54		2		3
9					55		1		1
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34	1		1		80				
35			1		81				
36	4		4		82				
37	6		15		83				
38	3		8		84				
39	9	2	27	2	85				
40	17		38	1	86				
41	40	3	72	7	87				
42	29	4	72	12	88				
43	18	10	39	28	89				
44	34	18	70	36	90				
45	20	33	37	92	91				
46	19	24	32	52					

Table 6.2 (Continued)

DATE 3 August 1956 TIME 0135-0215 CST RUN NO. 29

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55			3	
10					56			5	
11					57	1		7	
12					58	6		15	
13					59	3		15	
14					60	10		31	
15					61	12		28	
16					62	19		39	
17					63	25		34	
18					64	16		24	
19					65	23		32	
20					66	19		19	
21					67	26		26	
22					68	21		23	
23					69	14		14	
24					70	9		10	
25					71	10		11	
26					72	13		22	
27					73	5		11	
28					74	4		28	
29					75	3		24	
30					76	1		10	
31					77			22	
32					78			11	
33					79			8	
34					80			6	
35					81				
36					82			1	
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 3 August 1956 TIME 1255-1315 CST RUN NO. 30

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	8	2	12	2
2					48	13	5	15	6
3					49	8	4	12	4
4					50	9	2	11	3
5					51	13	3	23	4
6					52	18	7	28	7
7					53	16	11	26	13
8					54	22	7	29	12
9					55	16	7	30	14
10					56	26	3	40	12
11					57	13	15	19	36
12					58	12	14	37	34
13					59	16	6	26	20
14					60	3	25	24	51
15					61	6	12	19	28
16					62	6	18	19	32
17					63	6	25	21	49
18					64	4	15	16	30
19					65	2	10	11	20
20					66		8	8	15
21					67		19	7	32
22					68	1	5	12	16
23					69		7	5	16
24					70		1	4	5
25					71		4	1	8
26					72		2	1	4
27					73		2		4
28					74			1	
29					75			1	3
30					76				
31					77		1		2
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42	2		3		88				
43	2		2		89				
44	4		4		90				
45	4		4		91				
46	10		11						

Table 6.2 (Continued)

DATE 3 August 1956 TIME 1455-1515 CST RUN NO. 31

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47			2	
2					48			1	1
3					49			3	1
4					50			4	4
5					51			6	
6					52			11	1
7					53			8	3
8					54			10	6
9					55	1		17	4
10					56	2		23	1
11					57	1		9	5
12					58	6	2	27	8
13					59	6	2	13	6
14					60	8	5	23	12
15					61	5	6	18	21
16					62	8	5	25	13
17					63	13	13	23	31
18					64	12	12	34	29
19					65	12	20	21	31
20					66	12	19	19	34
21					67	11	33	17	45
22					68	16	39	24	62
23					69	15	21	20	46
24					70	13	21	16	27
25					71	19	11	22	22
26					72	20	7	22	16
27					73	9	10	9	14
28					74	20		20	2
29					75	17	8	17	10
30					76	3	1	3	4
31					77	5	3	5	12
32					78	2	1	2	5
33					79	2	1	3	1
34					80				2
35					81	1		1	1
36					82	1		1	
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46			1						

Table 6.2 (Continued)

DATE 6 August 1956 TIME 1955-2015 CST RUN NO. 32

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47		38	2	83
2					48		47		97
3					49		65		115
4					50		43		81
5					51		23		39
6					52		1	1	5
7					53		2	2	3
8					54				1
9					55				1
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26			1		72				
27					73				
28			1		74				
29					75				
30					76				
31					77				
32					78				
33			2		79				
34			1		80				
35			8		81				
36			12		82				
37	5		20		83				
38	2		18		84				
39	22		54		85				
40	25		48		86				
41	58		97		87				
42	55		108		88				
43	30		49	1	89				
44	26		41	2	90				
45	8	8	12	23	91				
46		13	2	29					

Table 6.2 (Continued)

DATE 7 August 1956 TIME 1255-1310 CST RUN NO. 33

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	20	13	40	36
2					48	15	17	27	31
3					49	22	17	34	30
4					50	18	22	25	42
5					51	20	15	26	34
6					52	12	20	15	34
7					53	9	16	12	35
8					54	10	18	11	38
9					55	5	23	6	39
10					56	3	14	3	19
11					57		14	0	31
12					58	2	9	2	16
13					59		2		2
14					60		2		3
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32	1		1		78				
33	2		2		79				
34	2		2		80				
35	5		5		81				
36	6		8	1	82				
37	2		7		83				
38	1		3		84				
39	5		17		85				
40	4	2	11	3	86				
41	5	1	19	1	87				
42	9	8	43	11	88				
43	10	2	24	14	89				
44	16	8	53	18	90				
45	17	6	37	16	91				
46	21	11	45	24					

Table 6.2 (Continued)

DATE 7 August 1956 TIME 1455-1515 CST RUN NO. 34

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17			1		63				
18					64				
19	1		2		65				
20	2		7		66				
21	4		10		67				
22	5		7	2	68				
23	7		24	2	69				
24	12		29	7	70				
25	6	4	17	11	71				
26	15	1	51	9	72				
27	25	6	49	15	73				
28	32		62	11	74				
29	11	6	22	32	75				
30	24	6	41	20	76				
31	36	13	57	34	77				
32	20	14	33	45	78				
33	20	6	26	13	79				
34	7	25	17	48	80				
35	7	17	16	36	81				
36	2	19	3	32	82				
37	2	16	2	28	83				
38	1	24	1	34	84				
39	1	17	1	23	85				
40		24	1	31	86				
41		17		18	87				
42		13		14	88				
43		7		8	89				
44		5		5	90				
45				1	91				
46									

Table 6.2 (Continued)

DATE 7 August 1956 TIME 2255-2315 CST RUN NO. 35-S

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16	1		5		62				
17	2		4		63				
18	4		10		64				
19	4		18		65				
20	15		32		66				
21	30		53		67				
22	13		24	1	68				
23	58		86		69				
24	41	1	62	4	70				
25	14	3	26	15	71				
26	33	6	72	18	72				
27	12	17	24	35	73				
28	8	12	26	24	74				
29	3	40	9	88	75				
30	1	36	9	63	76				
31	1	38	12	60	77				
32		29	3	50	78				
33		12	2	28	79				
34		20		40	80				
35		14		23	81				
36		9		17	82				
37		2		11	83				
38		1		2	84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 11 August 1956 TIME 2125-2145 CST RUN NO. 35

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1		3		3	47				
2		5		11	48				
3		3		6	49				
4		8		14	50				
5		11		12	51				
6		5		9	52				
7		30		30	53				
8		26		26	54				
9		3		3	55				
10		108		108	56				
11		25		25	57				
12		12		121	58				
13				10	59				
14				17	60				
15	1		1	52	61				
16	2		3	28	62				
17			4		63				
18			28	1	64				
19	4		48		65				
20	30		46		66				
21	52		88		67				
22	50		173		68				
23	77		31		69				
24	17		38		70				
25	5		18		71				
26	2				72				
27			1		73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 11 August 1956 TIME 2325-2345 CST RUN NO. 36

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27			1		73				
28					74				
29					75				
30			2		76				
31	2		14		77				
32	8		18	2	78				
33	10		41		79				
34	26		50	5	80				
35	72	1	105	12	81				
36	38	3	46	24	82				
37	50	9	63	32	83				
38	18	23	23	76	84				
39	10	37	11	84	85				
40	4	37	6	104	86				
41		57		55	87				
42	2	35	3	43	88				
43		18		22	89				
44		16	1	16	90				
45		2		2	91				
46		2		2					

Table 6.2 (Continued)

DATE 12 August 1956 TIME 0255-0315 CST RUN NO. 37

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	24	13	58	24
2					48	26	22	53	38
3					49	26	33	49	61
4					50	26	20	60	45
5					51	29	18	54	58
6					52	19	27	36	56
7					53	23	22	30	45
8					54	7	23	14	39
9					55	13	23	15	36
10					56	4	5	8	15
11					57	1	3	3	12
12					58	2	2	3	2
13					59	1	2	1	3
14					60		2		1
15					61				1
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37			1		83				
38					84				
39					85				
40					86				
41	3	2	5	4	87				
42	2	1	10	3	88				
43	7	1	10	1	89				
44	8	1	20	3	90				
45	6	9	22	17	91				
46	13	11	28	14					

Table 6.2 (Continued)

DATE 12 August 1956 TIME 0455-0515 CST RUN NO. 38

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	5	9	9	18
2					48	1	9	3	15
3					49		5	1	10
4					50				2
5					51				1
6					52			1	1
7					53			1	
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32			2		78				
33					79				
34			2		80				
35	4		9		81				
36	6		8		82				
37	16		33	1	83				
38	11	1	34	4	84				
39	28	1	52	8	85				
40	29	17	49	40	86				
41	48	22	89	42	87				
42	35	29	83	71	88				
43	30	51	31	97	89				
44	16	31	50	66	90				
45	9	42	14	73	91				
46	1	23	7	31					

Table 6.2 (Continued)

DATE 13 August 1956 TIME 2225-2245 CST RUN NO. 39

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9		1		1	55				
10					56				
11					57				
12	1	1	1	1	58				
13					59				
14		3		3	60				
15		1	1	1	61				
16		10		11	62				
17		1	1	1	63				
18		30	11	30	64				
19	2	22	11	27	65				
20	2	33	40	41	66				
21	9	25	34	46	67				
22	8	34	19	89	68				
23	39	18	61	47	69				
24	21	28	25	76	70				
25	21	12	26	44	71				
26	38	2	41	5	72				
27	33	7	43	23	73				
28	30	1	48	5	74				
29	6	5	13	10	75				
30	16	2	31	7	76				
31	6	3	26	6	77				
32	2	1	13	1	78				
33	3		14	1	79				
34			8	1	80				
35	1		5		81				
36			2		82				
37	1		2		83				
38				1	84				
39	1		1		85				
40			1		86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 14 August 1956 TIME 0025-0045 CST RUN NO. 40

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	20	16	29	21
2					48	17	10	28	15
3					49	15	15	31	18
4					50	12	7	29	11
5					51	13	13	32	19
6					52	3	8	16	17
7					53	8	14	26	27
8					54	6	17	12	28
9					55	4	20	6	23
10					56	5	21	8	24
11					57		12	1	15
12					58	1	6	2	7
13					59		1		1
14					60		1		1
15					61		1		1
16					62				1
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30				1	76				
31			1		77				
32					78				
33					79				
34	1		2		80				
35			4	3	81				
36	2		3	1	82				
37	2		17	3	83				
38	2		7	8	84				
39	7	3	26	17	85				
40	4	1	21	24	86				
41	22	7	45	34	87				
42	18	7	50	37	88				
43	20	6	11	29	89				
44	26	15	33	32	90				
45	17	19	20	36	91				
46	15	20	18	25					

Table 6.2 (Continued)

DATE 14 August 1956 TIME 0255-0315 CST RUN NO. 41

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	1		2	
2					48	2		2	1
3					49	2		3	3
4					50	7		15	2
5					51	11		22	4
6					52	7	3	17	10
7					53	27	8	59	26
8					54	27	16	65	31
9					55	44	19	94	75
10					56	42	44	74	61
11					57	34	27	58	90
12					58	20	51	34	99
13					59	11	40	19	34
14					60	5	15	10	23
15					61		14	1	12
16					62		2		5
17					63		1	1	2
18					64			1	
19					65			1	1
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46			1						

Table 6.2 (Continued)

DATE 14 August 1956 TIME 0455-0515 CST RUN NO. 42

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50			1	
5					51				
6					52			1	
7					53	2	1	2	1
8					54	2	1	3	1
9					55	3		4	
10					56	6	1	9	2
11					57	5	2	11	3
12					58	19	9	34	13
13					59	14	5	28	11
14					60	28	9	52	25
15					61	25	12	52	31
16					62	33	27	66	50
17					63	26	48	56	108
18					64	26	28	41	69
19					65	17	34	42	59
20					66	16	24	34	45
21					67	7	20	18	28
22					68	4	13	9	22
23					69	4	3	7	4
24					70	1	1	4	2
25					71	1		2	1
26					72	1	1	1	1
27					73		1		1
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 15 August 1956 TIME 1155-1215 CST RUN NO. 43

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	24	20	41	33
2					48	7	13	14	21
3					49	6	14	8	31
4					50	3	9	10	21
5					51	6	8	10	14
6					52	2	4	3	11
7					53	1	4	2	12
8					54	2	5	3	10
9					55	1	1	3	3
10					56	1	1	2	1
11					57		2	1	2
12					58		5	1	8
13					59		1	1	1
14					60	1	1	3	1
15					61		1	2	1
16					62				
17					63				
18					64				
19					65			1	
20					66				
21					67				
22					68				
23			2		69				
24	1		2		70				
25					71				
26			2		72				
27			2		73				
28	4		8	1	74				
29				4	75				
30	5		9	2	76				
31	7		17	4	77				
32	8		11	4	78				
33	7	3	18	4	79				
34	11	1	24	9	80				
35	5		16	7	81				
36	7	3	14	10	82				
37	14	7	25	13	83				
38	15	10	18	16	84				
39	17	4	33	13	85				
40	8	11	14	23	86				
41	13	6	30	19	87				
42	9	15	30	31	88				
43	11	17	20	34	89				
44	22	20	37	37	90				
45	10	31	22	46	91				
46	12	23	20	32					

Table 6.8 (Continued)

DATE 15 August 1956 TIME 1355-1415 CST RUN NO. 44

Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m
1				
2				
3				1
4				
5				
6				1
7				
8				1
9				1
10				1
11				
12				1
13				1
14				1
15				
16			1	2
17			0	3
18			3	6
19		1	0	5
20			2	1
21	5	1	8	5
22	2	3	9	13
23	5	1	16	4
24	2		8	7
25	4	1	4	9
26	5	3	7	8
27	4	3	10	8
28	14	4	23	7
29	4	1	8	7
30	14	6	20	16
31	10	13	21	26
32	12	6	19	14
33	16	5	27	6
34	9	10	15	21
35	18	3	32	12
36	12	12	21	17
37	11	10	18	22
38	13	16	23	20
39	17	10	39	16
40	5	20	13	40
41	21	15	41	28
42	10	15	27	28
43	4	9	12	17
44	10	13	24	18
45	5	15	11	26
46	3	8	6	11
47	3	9	6	14
48	2	5	2	6
49		11	2	12
50		2	1	4
51		1		1
52				2
53		1		1
54		3		3
55				1
56				
57		1		1
58		1		1
59		1		1
60				
61				
62		1		1
63				
64				
65				
66				
67				
68				
69				
70				
71				
72				
73				
74				
75				
76				
77				
78				
79				
80				
81				
82				
83				
84				
85				
86				
87				
88				
89				
90				
91				

Table 6.2 (Continued)

DATE 15 August 1956 TIME 1655-1715 CST RUN NO. 45

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	2	5	2	7
2					48		3		4
3					49		3		4
4					50				1
5					51				
6					52				
7					53		1		2
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19			1		65				
20					66				
21					67				
22			1		68				
23			2		69				
24			1		70				
25			2	1	71				
26			1	1	72				
27			2	5	73				
28	1		6	2	74				
29		1	6	3	75				
30	1		12	2	76				
31	2	2	15	9	77				
32	5	3	15	7	78				
33	16	2	38	2	79				
34	16	10	33	22	80				
35	38	8	64	12	81				
36	15	4	29	11	82				
37	38	19	70	38	83				
38	20	22	39	49	84				
39	20	33	41	46	85				
40	14	32	21	62	86				
41	14	21	21	47	87				
42	18	31	33	48	88				
43	7	16	7	35	89				
44	8	12	10	30	90				
45	3	7	5	20	91				
46	2	5	2	9					

Table 6.2 (Continued)

DATE 15 August 1956 TIME 1840-1900 CST RUN NO. 46

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12	1		1		58				
13					59				
14	1	3	2	3	60				
15	1	2	2	3	61				
16	5	7	14	12	62				
17	4	3	12	6	63				
18	8	15	24	27	64				
19	22	36	23	51	65				
20	16	15	43	18	66				
21	23	23	45	40	67				
22	39	30	32	45	68				
23	19	17	65	33	69				
24	14	12	40	35	70				
25	24	19	26	39	71				
26	15	8	53	23	72				
27	25	12	40	39	73				
28	2	10	27	21	74				
29	8	17	5	38	75				
30	1	3	6	20	76				
31	3	3	6	12	77				
32	4	4	8	8	78				
33	3		4	3	79				
34	1		1	2	80				
35	1	1		1	81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 20 August 1956 TIME 0955-1015 CST RUN NO. 47

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47		1	1	1
2					48			1	
3					49		1	4	1
4					50		1	7	1
5					51			6	
6					52		2	4	2
7					53		2	4	2
8					54		2	5	2
9					55		1	7	1
10					56			6	
11					57		5	3	6
12					58	3	4	6	4
13					59		2	3	4
14					60		8	2	9
15					61	3	3	5	5
16					62	1	2	4	5
17					63	3	9	7	14
18					64	3	8	6	12
19					65	3	9	9	11
20					66		9	5	11
21					67	4	14	11	18
22					68	4	21	6	26
23					69	2	15	9	18
24					70	9	18	18	20
25					71	6	24	13	31
26					72	16	24	25	34
27					73	4	10	10	25
28					74	11	4	21	8
29					75	12	15	36	26
30					76	4	11	12	21
31					77	16	5	32	20
32					78	16	2	31	9
33					79	13	5	20	26
34					80	5	1	6	15
35					81	20		24	8
36					82	25		29	14
37					83			4	5
38					84	25	1	34	6
39					85	6		7	5
40					86	7		9	3
41					87	6		4	5
42					88	2		1	9
43					89			8	6
44					90	7		1	7
45			1		91	1		3	4
46					Off Scale	2	1	1	16

Table 6.2 (Continued)

DATE 21 August 1956 TIME 0855-0915 CST RUN NO. 48

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47				
2					48			1	
3					49				
4					50				
5					51				
6					52	2		4	1
7					53	1		6	2
8					54	4	2	7	5
9					55	3	2	10	4
10					56	8	6	25	8
11					57	2	10	15	15
12					58	9	18	29	29
13					59	13	9	32	26
14					60	29	23	58	42
15					61	9	26	31	44
16					62	32	19	53	40
17					63	14	42	29	89
18					64	35	30	59	53
19					65	17	20	30	39
20					66	14	14	26	36
21					67	15	3	24	15
22					68	13	8	16	17
23					69	7	2	10	6
24					70	7	3	7	4
25					71	5	1	6	1
26					72	1	1	1	1
27					73		1		1
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 21 August 1956 TIME 1055-1115 CST RUN NO. 49

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	10	6	18	14
2					48	6	5	19	10
3					49	6		16	12
4					50	8	9	12	12
5					51	13	6	24	17
6					52	8	10	17	20
7					53	8	15	28	27
8					54	3	11	19	21
9					55	22	16	39	34
10					56	15	14	37	31
11					57	14	19	24	44
12					58	20	23	49	48
13					59	19	13	26	25
14					60	20	18	38	30
15					61	12	18	20	28
16					62	14	9	25	16
17					63	7	15	10	29
18					64	6	5	8	12
19					65	4	3	5	8
20					66	2	9	5	10
21					67	3	2	4	2
22					68		2		3
23					69		2		2
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37	1		1		83				
38					84				
39		1		1	85				
40					86				
41	2	1	2	1	87				
42	3	1	4	2	88				
43	2		4		89				
44	5	4	6	4	90				
45	3	2	8	14	91				
46	4	1	10	2					

Table 6.2 (Continued)

DATE 21 August 1956 TIME 1355-1415 CST RUN NO. 50

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	1		1	
2					48	1		1	
3					49				
4					50			1	1
5					51	2		3	2
6					52		1	2	2
7					53	2	1	2	4
8					54	4	5	4	4
9					55	10	4	14	7
10					56	7	5	13	8
11					57	7	10	13	14
12					58	13	16	25	26
13					59	9	8	21	13
14					60	16	27	31	29
15					61	17	27	24	42
16					62	15	16	35	25
17					63	10	21	21	37
18					64	15	9	30	29
19					65	14	18	29	28
20					66	11	12	34	25
21					67	16	13	28	29
22					68	17	16	31	50
23					69	18	9	34	24
24					70	13	13	30	32
25					71	5	8	13	18
26					72	10		23	9
27					73	4	1	6	5
28					74	1		2	1
29					75			4	2
30					76	1		1	4
31					77	1		2	1
32					78			1	2
33					79				3
34					80				
35					81				1
36					82				1
37					83				
38					84				1
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 21 August 1956 TIME 1525-1545 CST RUN NO. 51

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58			1	
13					59				
14					60				
15					61				
16					62				
17					63			2	
18					64	3	4	5	4
19					65	1	4	7	4
20					66	1	7	8	8
21					67	3	8	8	8
22					68	2	19	9	13
23					69	3	12	11	15
24					70	4	10	6	19
25					71	6	19	9	19
26					72	12	15	22	31
27					73	8	17	13	20
28					74	11	7	29	26
29					75	22	21	33	36
30					76	6	13	18	13
31					77	14	18	30	27
32					78	14	9	39	32
33					79	17	8	26	31
34					80	15	8	21	13
35					81	18	4	28	28
36					82	25	11	37	26
37					83	10	9	15	14
38					84	17	5	32	25
39					85	9	5	13	7
40					86	6	2	10	24
41					87	4	3	8	5
42					88	4		18	9
43					89	1	1	3	4
44					90	2	1	10	10
45					91	1		4	1
46					Off Scale	1		4	4

Table 6.2 (Continued)

DATE 24 August 1956 TIME 1110-1130 CST RUN NO. 52

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1			2		47				
2			1		48				
3					49				
4	2		2		50				
5	1		2		51				
6			2		52				
7	1		3		53				
8	6		9		54				
9	5		9		55				
10	7		8		56				
11	9		25		57				
12	10		27		58				
13	5		15		59				
14	9		21		60				
15	3		12		61				
16	12		34		62				
17	8		18		63				
18	8		26		64				
19	6		14		65				
20	16		35		66				
21	12		24		67				
22	5		9		68				
23	15		27		69				
24	8		21		70				
25	2		2		71				
26	13		20		72				
27	5		10		73				
28	6		12		74				
29	3		4		75				
30	6		10		76				
31	14		16		77				
32	6		10		78				
33	4		4		79				
34	0		9		80				
35	3		9		81				
36	8		5		82				
37	6		8		83				
38	3		5		84				
39	5		5		85				
40	2		3		86				
41			1		87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 24 August 1956 TIME 1955-2015 CST RUN NO. 53

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16	1		1		62				
17	1		2		63				
18	3	1	5	2	64				
19	7	15	12	20	65				
20	30	31	41	29	66				
21	61	92	112	137	67				
22	27	83	63	123	68				
23	65	11	128	72	69				
24	26	7	67	90	70				
25	8		21	5	71				
26	9		21	1	72				
27	1		2		73				
28			1		74				
29			1		75				
30	1		1		76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 24 August 1956 TIME 2155-2215 CST RUN NO. 54

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16	1		1		62				
17					63				
18			1		64				
19	1		1		65				
20	5		8	1	66				
21	11	6	20	8	67				
22	9	11	14	14	68				
23	24	10	51	11	69				
24	25	21	55	38	70				
25	18	32	30	50	71				
26	45	24	90	47	72				
27	36	39	72	67	73				
28	41	21	74	48	74				
29	4	28	17	75	75				
30	9	16	22	48	76				
31	4	12	11	31	77				
32	1	11	4	19	78				
33	2	2		9	79				
34	2	5	5	8	80				
35		2		5	81				
36					82				
37			1		83				
38	2		2		84				
39			1		85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 25 August 1956 TIME 0055-0115 CST RUN NO. 55

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47				
2					48				
3					49		1		1
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24			1		70				
25					71				
26			7		72				
27	3	2	6	2	73				
28	6		17		74				
29	3		6		75				
30	10	4	22	7	76				
31	21	5	40	8	77				
32	22	9	55	19	78				
33	36	5	62	12	79				
34	34	22	67	46	80				
35	39	28	76	55	81				
36	18	23	40	45	82				
37	23	40	36	83	83				
38	10	37	15	77	84				
39	9	24	15	52	85				
40	2	21	6	35	86				
41	1	11	3	23	87				
42	1	2	2	5	88				
43	1	3	2	6	89				
44	1	2	1	2	90				
45		1		1	91				
46		1		1					

Table 6.2 (Continued)

DATE 25 August 1956 TIME 0255-0315 CST RUN NO.56

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47				
2					48				
3					49				
4					50				
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18			1		64				
19					65				
20		1	2	1	66				
21		1	1	1	67				
22					68				
23	1		8	3	69				
24	2		14	7	70				
25		4	2	15	71				
26	5		19	8	72				
27	3	3	18	18	73				
28	8	3	24	16	74				
29	9	8	13	32	75				
30	18	13	31	26	76				
31	49	24	78	46	77				
32	26	26	41	36	78				
33	36	12	47	15	79				
34	27	29	52	50	80				
35	22	33	50	48	81				
36	10	24	16	37	82				
37	11	22	34	43	83				
38	6	20	8	35	84				
39	4	6	13	14	85				
40	1	5	3	15	86				
41	2	3	4	8	87				
42		3		5	88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 25 August 1956 TIME 1725-1745 CST RUN NO. 57

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	1		7	
2					48	1		7	
3					49	9	1	23	3
4					50	5	-	11	12
5					51	14	3	36	9
6					52	15	6	32	13
7					53	18	8	40	18
8					54	19	7	39	21
9					55	19	19	42	40
10					56	30	17	49	34
11					57	13	22	30	41
12					58	37	30	60	50
13					59	15	12	28	27
14					60	18	26	30	57
15					61	6	22	12	38
16					62	5	17	8	28
17					63	4	16	5	35
18					64	5	14	6	19
19					65		6	1	16
20					66		4	1	6
21					67	2	6	2	7
22					68		4		5
23					69	1		1	
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43			1		89				
44					90				
45			2		91				
46	3		6						

Table 6.2 (Continued)

DATE 25 August 1956 TIME 1925-1945 CST RUN NO. 58

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	24	36	71	53
2					48	6	56	22	78
3					49	4	79	17	137
4					50	2	35	5	89
5					51		11	2	63
6					52		6	2	25
7					53	2	2	3	11
8					54		2		5
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40			1		86				
41	4		7		87				
42	7		15		88				
43	19		34		89				
44	46		88		90				
45	25	6	63	9	91				
46	27	7	75	7					

Table 6.2 (Continued)

DATE 25 August 1956 TIME 2225-2245 CST RUN NO. 59

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	16	61	23	102
2					48	4	25	4	47
3					49	4	16	5	28
4					50	1	6	1	12
5					51	1	3	1	4
6					52		1		1
7					53	1		1	
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37	2		5		83				
38	3		4		84				
39	12		31		85				
40	13		24		86				
41	25		68	3	87				
42	34	2	111	9	88				
43	46	7	72	17	89				
44	57	15	86	44	90				
45	12	60	21	123	91				
46	9	44	22	88					

Table 6.2 (Continued)

DATE 25 August 1956 TIME 0135-0155 CST RUN NO. 60

Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m	Post No.	10 - min. Source	10 - min. 450 m	20 - min. Source	20 - min. 450 m
1					47	3		5	
2					48	3	1	3	2
3					49	4		5	2
4					50	8	1	9	2
5					51	8	1	13	4
6					52	22	7	35	9
7					53	19	11	29	16
8					54	35	13	53	24
9					55	37	32	78	60
10					56	34	21	79	41
11					57	18	50	56	98
12					58	26	47	64	96
13					59	12	20	24	38
14					60	5	20	12	50
15					61	2	8	8	17
16					62	3	2	4	5
17					63		5		9
18					64				2
19					65		1	1	2
20					66				
21					67				1
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44				1	90				
45	1		1		91				
46									

Table 6.2 (Continued)

DATE 26 August 1956 TIME 1055-1115 CST RUN NO. 61

Post	10 - min.		20 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	3		4	
2					48	4		4	
3					49	6	4	9	5
4					50	9		10	2
5					51	3	8	5	8
6					52	12	9	15	7
7					53	16	10	24	14
8					54	11	16	19	19
9					55	23	30	40	36
10					56	16	7	32	11
11					57	19	23	38	32
12					58	23	36	41	46
13					59	19	11	23	18
14					60	17	24	50	47
15					61	10	12	22	21
16					62	6	12	22	30
17					63	8	12	25	62
18					64	5	5	18	24
19					65	5	3	18	27
20					66	3		10	16
21					67	5	6	9	24
22					68	4	3	10	15
23					69	5	4	11	7
24					70	2	3	7	6
25					71	2		4	1
26					72	2	1	4	1
27					73			1	
28					74	2		3	
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46		1	1	1					

Table 6.2 (Continued)

DATE 26 August 1956 TIME 1355-1415 CST RUN NO. 62

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47				
2					48				
3					49	1		1	
4					50	1		1	
5					51				
6					52	4		4	
7					53	5	1	7	4
8					54	3		5	1
9					55	5	2	10	8
10					56	9	3	18	5
11					57	6	10	12	17
12					58	23	11	39	17
13					59	17	10	29	16
14					60	21	28	31	40
15					61	15	19	32	29
16					62	21	27	41	50
17					63	21	33	40	63
18					64	20	21	31	37
19					65	17	21	48	41
20					66	23	12	37	34
21					67	9	16	26	38
22					68	8	18	20	38
23					69	6	6	18	17
24					70		2	7	13
25					71	4		7	7
26					72			5	3
27					73			1	
28					74			3	
29					75	1		4	
30					76				
31					77			1	
32					78				
33					79				
34					80				
35					81			1	
36					82				
37					83				
38					84				
39					85				
40					86				
41					87				
42					88				
43					89				
44					90				
45					91				
46									

Table 6.2 (Continued)

DATE 29 August 1956 TIME 1925-1945 CST RUN NO. 65

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	34	7	10	53
2					48	11	7	9	18
3					49	8	4	4	13
4					50	5	1	3	7
5					51	5	1	1	6
6					52				1
7					53				
8					54			1	
9					55	1			1
10					56	1			1
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31			1		77				
32		1	1		78				
33					79				
34			1		80				
35					81				
36		1	2	1	82				
37		6	10		83				
38	1	1	8	1	84				
39	1	17	39	4	85				
40	5	10	28	6	86				
41	8	39	76	24	87				
42	17	44	87	49	88				
43	23	25	47	53	89				
44	30	39	82	77	90				
45	56	17	32	110	91				
46	34	20	37	54					

Table 6.2 (Continued)

DATE 29 August 1956 TIME 2125-2145 CST RUN NO. 66

Post	10 - min.		30 - min.		Post	10 - min.		20 - min.	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	2	3	2	6
2					48		1		4
3					49				3
4					50				1
5					51				
6					52				
7					53				
8					54				
9					55				
10					56				
11					57				
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29	1		2		75				
30	1		3		76				
31	1		1		77				
32	7		12		78				
33	7		14		79				
34	9		22		80				
35	18		50		81				
36	16	6	39	7	82				
37	22	9	65	13	83				
38	17	23	39	31	84				
39	29	22	55	25	85				
40	25	24	39	42	86				
41	31	33	59	66	87				
42	23	32	38	73	88				
43	13	32	18	77	89				
44	12	35	14	73	90				
45	3	15	4	38	91				
46	3	5	3	20					

Table 6.2 (Continued)

DATE 30 August 1956 TIME 0025-0045 CST RUN NO. 67

Post	10 - min.		20 - min.		Post	10 - min.		20 - min	
No.	Source	450 m	Source	450 m	No.	Source	450 m	Source	450 m
1					47	34	12	59	47
2					48	34	19	63	41
3					49	42	21	56	62
4					50	27	25	35	47
5					51	26	50	36	77
6					52	14	33	18	45
7					53	9	32	10	39
8					54	7	22	7	27
9					55	2	12	2	15
10					56		2		4
11					57		1		2
12					58		2		2
13					59				
14					60				
15					61				
16					62		1		1
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34					80				
35					81				
36					82				
37	1		1		83				
38			4		84				
39			2	1	85				
40			9		86				
41	1		14	2	87				
42	2		14	2	88				
43	4		20	8	89				
44	8	1	42	10	90				
45	9	4	32	28	91				
46	20	3	55	19					

Table 6.2 (Continued)

DATE 30 August 1956 TIME 0025-0245 CST RUN NO. 68

Post No.	10 - min.		20 - min.		Post No.	10 - min.		20 - min.	
	Source	450 m	Source	450 m		Source	450 m	Source	450 m
1					47	6	42	23	60
2					48	7	28	12	43
3					49	3	27	7	40
4					50		15	3	21
5					51	2	8	2	12
6					52		3		3
7					53		4		4
8					54				
9					55				
10					56				
11					57		1		1
12					58				
13					59				
14					60				
15					61				
16					62				
17					63				
18					64				
19					65				
20					66				
21					67				
22					68				
23					69				
24					70				
25					71				
26					72				
27					73				
28					74				
29					75				
30					76				
31					77				
32					78				
33					79				
34			1		80				
35			7	1	81				
36			9		82				
37	8		24	1	83				
38	2	1	11	2	84				
39	16		24	2	85				
40	8	1	26	9	86				
41	35	2	65	25	87				
42	41	5	86	43	88				
43	36	12	50	41	89				
44	44	20	63	47	90				
45	21	36	35	70	91				
46	11	35	31	55					

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